ATOFINA Chemicals, Inc.

December 9, 2003

Mr. Matt McClincy
Department of Environmental Quality
Northwest Region
2020 S.W. Fourth Ave., Suite 400
Portland, Oregon 97201-4987

Dear Mr. McClincy:

Enclosed are five copies of the Phase II Stage 1 & 2 In-River Groundwater and Sediment Investigation report. This report summarizes the Stage 1 work that was conducted from our docks during June of 2002, and the Stage 2 work that was conducted from a barge during February and March of 2003. A copy of this report has been sent directly to Tara Martich at EPA.

If you have any questions, please feel free to contact me at 503-225-7210.

Sincerely,
ATOFINA Chemicals, Inc.

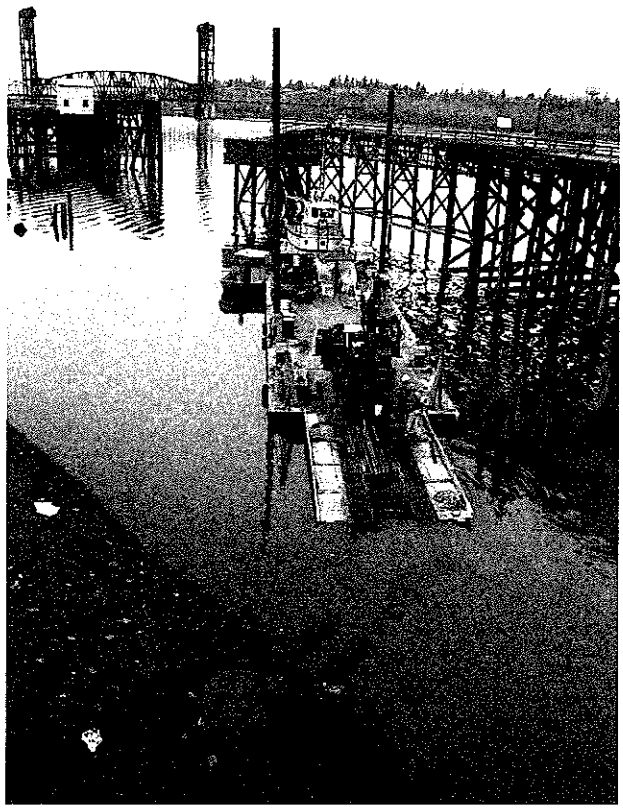
Larry D. Patterson
Environmental Manager

P:vmon

ATOFINA Chemicals, Inc.
6400 N.W. Front Avenue
Portland, Oregon 97210
503-228-7655

Phase II Stage 1 & 2 In-River Groundwater and Sediment Investigation Report

Volume 1 – Report and Appendix A



integral consulting inc.

Prepared for

ATOFINA Chemicals Inc.

Portland, Oregon

Prepared by

Integral Consulting, Inc.

Portland, Oregon

December 2003

PHASE II STAGE 1 & 2 IN-RIVER GROUNDWATER AND SEDIMENT INVESTIGATION

Prepared for

ATOFINA Chemicals, Inc.

6400 N.W. Front Avenue
Portland, Oregon 97210

Prepared by

integral consulting inc.

811 SW Naito Parkway, Suite 430
Portland, Oregon 97204

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
COIs	chemicals of interest
CPD	City of Portland datum (benchmark #2529)
DDT	dichlorodiphenyltrichloroethane
DEQ	Oregon Department of Environmental Quality
DGPS	differential global positioning system
DNAPL	dense nonaqueous-phase liquid
DO	dissolved oxygen
Eh	oxidation-reduction potential
EPA	United States Environmental Protection Agency
FSP	field sampling plan
HSP	health and safety plan
ID	inside diameter
MCB	monochlorobenzene
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MPR	manufacturing process residue
mV	millivolts
NAPL	nonaqueous-phase liquid
OD	outside diameter
OVM	organic vapor meter
QAPP	quality assurance project plan
RI	remedial investigation
TLC	thin-layer chromatography
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
VOC	volatile organic compound

1. INTRODUCTION

This report presents the results of the Phase II Stage 1 and 2 in-river groundwater and sediment investigation offshore of the ATOFINA Chemicals, Inc. (ATOFINA) facility in Portland, Oregon. The Stage 1 investigation was conducted to characterize the nature and extent of chemicals of interest (COIs) in groundwater and sediments that are downgradient of the existing monitoring well network on the upland portion of the site. This work was designed to obtain an understanding of the potential transport and fate of COIs along pathways downgradient of the former Acid Plant, and to use those data as part of the criteria for choosing borehole locations for the Stage 2 investigation. The primary objective of the Phase II Stage 2 investigation was to develop additional information on hydrolithologic units, concentrations of COIs, and potential pathways in affected sediment areas to address source control issues at the site. The combined data from the Phase II Stage 1 and 2 investigations will be used to identify the need for additional source control measures at the site. Ongoing and recently completed remedial activities at the ATOFINA site include the completion of the uplands remedial investigation, the completion of two phases of upland soil removal, and bench- and field-scale pilot studies for the in-situ treatment of monochlorobenzene (MCB), perchlorate, and hexavalent chromium. The results of these ongoing studies will be used along with the data from this report to assess further source control evaluation alternatives.

The Phase II Stage 1 investigation was conducted at the site from June 3-12, 2002. The work was conducted in general accordance with a work plan submitted by ATOFINA to the Oregon Department of Environmental Quality (DEQ) on May 10, 2002 (ATOFINA 2002a), as modified according to DEQ comments and ATOFINA responses in letters dated May 29, 2002 and May 31, 2002, respectively. The preliminary findings of the Stage 1 investigation were reported in an August 23, 2002 letter to DEQ. A total of seven boreholes were advanced during the Stage 1 investigation.

The Phase II Stage 2 investigation was conducted at the site from February 17 through March 10, 2003. The work was conducted in general accordance with a work plan submitted by ATOFINA to DEQ on August 23, 2002 (ATOFINA 2002c) as modified according to letters dated September 20, 2002 (DEQ 2002b), September 24, 2002 (EPA 2002), October 25, 2002 (DEQ 2002c), November 14, 2002 (ATOFINA 2002d), and November 25, 2002 (DEQ 2002d). A total of 18 boreholes were advanced during the Stage 2 investigation.

2. PHASE II STAGE 1 AND 2 INVESTIGATION RESULTS

A total of seven boreholes were advanced from Docks 1 and 2 during the Stage 1 investigation (Figure 1). The only significant deviation from the work plan was that a groundwater sample was not collected from borehole WB-6. A groundwater sample was not collected from this borehole because of time constraints resulting from the slow hydraulic ram on the modified Geoprobe® unit that was used to advance this borehole. The tool assembly had to be removed from the conductor casing using the hydraulic ram because the Geoprobe® unit was not equipped with a winch.

A total of 18 boreholes were advanced during the Stage 2 investigation within a 400 ft by 1,000 ft area in the vicinity of Docks 1 and 2 (Figure 1). Two of these boreholes (WB-24 and WB-25) were unplanned and were added to the scope of the investigation at the end of the planned field program to further delineate the distribution of COIs on the landward side of the docks. There were no other significant deviations from the work plan.

2.1 FIELD METHODS

The field methods employed during the Stage 1 investigation differed from those used in the Stage 2 investigation and are presented separately below.

2.1.1 Stage 1 Investigation Methods

A total of seven boreholes (WB-1 through WB-7) were advanced using direct-push techniques from Docks 1 and 2. Boreholes WB-1 through WB-5 were advanced using a standard Geoprobe® push-probe rig. Borehole WB-6 was advanced using a smaller Geoprobe® push-probe unit attached to the bed of a standard pick-up truck because of a structural weight-load limitation on that portion of the dock. Borehole WB-7 was advanced on a narrow walkway on Dock 1 using a portable tripod Geoprobe® unit. The field methods described below apply to all three Geoprobe® units employed during the Stage 1 work.

Two sets of conductor casing were set at each borehole location to ensure alignment and advancement of the borehole in its proper location. One conductor casing was used to advance a borehole for sediment sampling; the other conductor casing was used to collect groundwater samples. Sediment samples were collected using a square aluminum sediment sampler (2.5 in. square by 3.5 ft long) for the shallowest interval and Geoprobe® Macrocore samplers (2 in. diameter by 4 ft long) with new acetate liners for each sample interval collected from the deeper sediments.

Sediments were continuously sampled for lithologic description and field screening. Where possible, sediments were composited over approximate 2-ft intervals and field screened for volatile organic compounds (VOCs) using an organic vapor monitor (OVM), for nonaqueous-phase liquid (NAPL) using Sudan IV® hydrophobic dye, and for dichlorodiphenyltrichloroethane (DDT) using thin-layer chromatography (TLC) methods. If there was sufficient recovery, sediment samples were collected from each 2-ft interval and archived frozen at an analytical laboratory for possible future analysis.

Groundwater samples were collected from one or more discrete intervals at each borehole station (except WB-6, as discussed above) to provide further data on the vertical distribution of MCB and DDT and its metabolites in groundwater. Following termination of the sediment borehole at each location, the Geoprobe® unit was moved over a short distance (1-2 ft) and the second borehole was advanced to collect the groundwater samples. At each borehole, the shallower grab groundwater sample was obtained by advancing the drill bit to the bottom of the first target interval and then retracting the sheath to expose the 4-ft long stainless-steel Geoprobe® screen. Prior to sampling, groundwater and river water levels were measured with an electronic water level meter relative to the dock surface to an accuracy of 0.01 ft. Groundwater and river levels were measured inside and just outside the push-probe rods, respectively, until the readings had stabilized. After sample collection, the tool assembly was removed and decontaminated, and the borehole was advanced to the bottom of the second target interval, if applicable, and the groundwater sampling process was repeated. The target depth for the groundwater samples was determined from the lithologic information collected from the first borehole in each pair and was selected in an attempt to target physically distinct groundwater intervals. Field parameters (i.e., temperature, pH, dissolved oxygen [DO], oxidation-reduction potential [Eh], and specific conductance) were measured during purging. One groundwater sample was collected from each target depth for field screening (OVM headspace monitoring) and for laboratory analysis for VOCs by U. S. Environmental Protection Agency (EPA) Method 8260B and for organochlorine pesticides by EPA Method 8081A. Once the groundwater sampling was completed, the sediment and groundwater boreholes were abandoned with bentonite grout.

The horizontal location and elevation of the top of each Geoprobe® borehole was surveyed to within 0.1 ft and 0.01 ft accuracy, respectively, by a public land surveyor licensed in the state of Oregon. All work was conducted in general accordance with the detailed field and laboratory procedures outlined in the field sampling plan (FSP; Appendix A), the quality assurance project plan (QAPP; Appendix B), and the health and safety plan (HSP; Appendix C) of the Elf Atochem Acid Plant Area Remedial Investigation and Feasibility Study Work Plan (Exponent 1998).

2.1.2 Stage 2 Investigation Methods

A total of 18 sediment boreholes (WB-8 through WB-25) were advanced using a Geoprobe® push-probe rig mounted on a barge. The barge platform had a moon hole in the approximate center of the barge through which tooling was advanced to collect sediment and groundwater samples. Some boreholes were advanced with the Geoprobe® rig mounted at the back of the barge so the boreholes could be advanced in shallow water and other limited access areas. The barge and Geoprobe® rig were positioned over each target location utilizing a small tugboat or aluminum boat and were guided to the location using a differential global positioning system (DGPS). Once positioned over the target location, the barge spuds were gradually advanced into the sediments to provide a stable drilling platform.

Two sets of conductor casing were set at each borehole location to ensure alignment and advancement of the borehole in its proper location. One conductor casing was used to advance a borehole for sediment sampling; the other conductor casing was used to collect groundwater samples.

Once the conductor casing (5-in. diameter) was set, a combination of square sediment samplers (2-1/2-in. square by 3.5 ft long), split spoon samplers (3-in. diameter by 5 ft long), and Geoprobe® Macrocore samplers with sand catchers (2-in. diameter sampler by 4 ft long) were used to continuously collect the sediment samples for visual examination, logging, and field screening. The shallowest sediment samples were collected using a square aluminum sediment sampler (2.5 in. square by 3.5 ft long). Subsequent samples were collected using the 5 ft long split-spoon sampler. The conductor casing (dual tube casing) and the 5 ft long sampler were advanced with direct-push techniques. The conductor casing was advanced simultaneously with the sampler to each target sampling interval, effectively casing off the previously sampled sediment interval. Upon driving the dual tube system at 5 ft intervals within the sediment, the inner string of sampling equipment was retrieved. The dual tube method was employed until there was insufficient sample recovery or until the pressure required to drive the dual tubes was beyond the capabilities of the push-probe rig (i.e., refusal). At that point, a Geoprobe® Macrocore sampler with new acetate liners for each sample interval was employed to advance the borehole to the target depth (refusal).

Sediments were continuously sampled for lithologic description and field screening. Where possible, sediments were composited over approximate 2 ft intervals and field screened for VOCs using an OVM, for NAPL using Sudan IV® hydrophobic dye, and for DDT using TLC methods. If there was sufficient recovery, sediment samples were collected from each 2 ft interval and selected samples were analyzed for organochlorine pesticides by EPA Method 8081A. The sediment samples that were not analyzed were sent to the analytical laboratory to be archived frozen for possible future analysis.

Groundwater samples were collected from each Geoprobe® borehole in which ample penetration of the sediments could be achieved (i.e., a minimum of 4 ft), with the exception of borehole WB-24, which was advanced only for the purpose of collecting sediment samples. Groundwater samples were collected from each borehole with the exception of borehole WB-17, where only 2.2 ft of sediment was encountered prior to sampler refusal on basalt. Prior to sampling, groundwater and river water levels were measured with an electronic water level meter relative to the barge deck surface to an accuracy of 0.01 ft. Groundwater and river levels were measured inside and just outside the push-probe rods, respectively, until the readings had stabilized.

The groundwater sampling procedure employed in the Stage 2 boreholes was the same as that used in the Stage 1 boreholes. Each groundwater sample was analyzed for VOCs by EPA Method 8260B, for organochlorine pesticides by EPA Method 8081A, and for perchlorate by EPA Method 314.0. Once the groundwater sampling was completed, the sediment and groundwater boreholes were abandoned with bentonite grout.

The horizontal location of each Geoprobe® borehole was surveyed to within an approximate 1 meter accuracy using a DGPS unit. The elevation of each borehole (i.e., mudline) was measured by using a laser level to determine the elevation of the barge deck relative to arbitrary benchmarks located on platforms beneath Docks 1 and 2. Periodic measurements were made throughout each day to monitor river stage changes. Based on this information, adjustments were made to the sediment and groundwater sample depth intervals to compensate for river stage changes. The elevations of the arbitrary benchmarks on the platforms beneath the docks were measured relative to two permanent onsite monitoring wells using the laser level. The accuracy of the elevations, relative to two existing monitoring wells, is $\pm$ 0.1 ft. Further error may have been introduced to the elevation estimate as a result of the difficulty in assessing the top of the soft mudline in some areas and also because of fluctuations in the river surface from tidal influences. For these reasons, the mudline elevations are assumed to be accurate to $\pm$ 1 ft.

All work was conducted in general accordance with the detailed field and laboratory procedures outlined in the FSP (Appendix A), the QAPP (Appendix B), and the HSP (Appendix C) of the Elf Atochem Acid Plant Area Remedial Investigation and Feasibility Study Work Plan (Exponent 1998).

2.2 HYDROSTRATIGRAPHY

Geoprobe® boreholes WB-1 through WB-25 were advanced during the Phase II Stage 1 and 2 investigations (Figure 1). Borehole logs are presented in Appendix A.

The total depth of borehole penetration ranged from approximately 2 (WB-17) to 43 (WB-4) ft below mudline (Table 1). Sediments were thickest on the landward side of Docks 1 and 2. The mudline elevation generally decreases eastward, as shown on the bathymetric map (Figure 2). The top of the mudline was encountered at elevations ranging from 7.6 ft City of Portland datum (CPD; corresponds to mean sea level) at borehole WB-1 on Dock 2 to -38.9 ft CPD at borehole WB-22, the eastern-most borehole (Table 1; Figure 2).

The top of the underlying basalt surface was encountered in 20 boreholes at elevations ranging from -14.3 (WB-2) to -43.1 (WB-21) ft CPD (Table 1). The basalt surface generally slopes to the east (Figure 3). There is an apparent high spot (i.e., mound) on the basalt surface around borehole WB-2. There are also two apparent troughs in the basalt surface. One trough is centered on Dock 1 and the other is just south of Dock 2, near borehole WB-14. The troughs may be erosional features produced by streams that previously flowed into the ancestral Willamette River at these locations.

Cross-sections in the vicinity of the Phase II boreholes are presented in Figures 4a through 9b. The sediments above the basalt become finer-grained and sand horizons are of more limited vertical extent farther from the shoreline (Figures 5a and 9a). The sediment thickness also thins away from the shoreline (in an eastward direction). The increased thickness of sediments on the landward side of the docks is likely a result of increased deposition because of the sheltering effect of the docks. In general, the sediments observed during the Phase II investigation represent a fining upward sequence (i.e., coarser sediments at the bottom and finer sediments at the top of the sequence) and become thinner toward the east.

Thin (i.e., less than 1 ft thick) sand and silt layers were observed in a number of the boreholes and are shown on the cross-sections. Based on the available data, many of these layers appear to be discontinuous. Some of these layers appear to dip to the east, consistent with the slope of the basalt surface. As discussed in Section 3, some of these horizons may be important controls on the migration pathways of COIs.

2.3 SEDIMENT RESULTS

Sediment sampling was attempted continuously in each borehole and sample recovery ranged from excellent (100 percent) to poor (0 percent), but generally was good to excellent. Sediment samples were screened for VOCs with an OVM and via obvious odor, for NAPL using hydrophobic dye and visual observations, and for DDT by TLC. None of the Stage 1 sediment samples was analyzed for pesticides. Selected sediment samples from the Stage 2 boreholes were submitted to a laboratory for analysis of organochlorine pesticides by EPA Method 8081A. The remaining sediment samples from the Phase II investigation were archived at the laboratory for possible future analysis.

2.3.1 VOC Field Screening

Field screening results for VOCs are presented in Table 2. The OVM used to screen the Phase II sediment samples for VOCs was calibrated with an isobutylene calibration standard; therefore, the reported OVM measurements are indicators of relative VOC concentrations but not specifically MCB concentrations.

OVM measurements were generally at background or low levels (i.e., less than 100 ppm) except in boreholes WB-5, WB-6, WB-10, WB-11, and WB-24. In borehole WB-5, the highest OVM measurement of 280 ppm was recorded at an elevation of -23.5 to -25.5 ft CPD. The highest OVM measurements in borehole WB-6 were 3,000 and 1,400 ppm at elevations of -22.4 to -24.4 ft and -28.4 to -30.4 ft CPD, respectively. In borehole WB-10, the highest OVM measurements of 120 ppm, 2,300 ppm, and 270 ppm were recorded at elevations of -18.0 to -19.0, -19.0 to -21.0 ft, and 21.0 to -23.0 ft CPD, respectively. The OVM readings throughout the remainder of boreholes WB-6 and WB-10 were at low or background levels. The highest OVM measurements in borehole WB-11 were 110 ppm and 1,200 ppm at elevations of -10.6 to -14.6 ft and -14.6 to -16.6 ft CPD, respectively. The OVM readings throughout the remainder of the WB-11 borehole were at low levels. In borehole WB-24, the highest OVM measurements were 320 ppm and 340 ppm at elevations of -10.0 to -12.0 and -12.0 to -14.0 ft CPD, respectively. The OVM readings were at low levels below these intervals; however, sediment samples were not collected above an elevation of -10.0 ft CPD (the mudline elevation was approximately 0.5 ft CPD). The OVM readings were generally consistent with organic odors noted by field personnel during the Phase II investigation.

The only sediment sample in the Stage 1 and 2 investigations exhibiting a positive response to the Sudan IV® field screening for NAPL was the sediment sample collected at an elevation of -12.5 to -14.4 ft CPD from borehole WB-6. However, this response may have been attributable to petroleum hydrocarbons rather than MCB, based on visual evidence and low OVM measurements. Residual NAPL of an uncertain origin was observed by visual inspection of the sample in borehole WB-6 collected at an elevation of -22.4 to -24.4 ft CPD. Residual NAPL was not detected with the Sudan IV® field screening of this sample, although there was limited sample available for screening. An approximate 0.1 ft thickness of sediment with visual evidence of residual NAPL characteristic of DDT manufacturing process residue (MPR) was observed in this sample interval, which also exhibited a high OVM measurement (3,000 mg/kg).

2.3.2 DDT Field Screening and Analytical Results

Each sediment sample collected from the Stage 1 and 2 investigations was screened for DDT by TLC. Field screening and analytical results for DDT are presented in Table 2.

Profiles of DDT concentrations in sediments are shown in Figure 10. Laboratory reports are presented in Appendix B.

2.3.2.1 Stage 1 and 2 Field Screening Results

None of the TLC DDT results exceeded 250 mg/kg in the Stage 1 boreholes. A horizon with elevated DDT concentrations was identified using TLC screening in boreholes WB-1, WB-3, and WB-4 at 4-8 ft below mudline (-10.3 to 3.6 ft CPD). The highest DDT concentration by TLC (250 mg/kg) was measured in borehole WB-5 at 1.8 to 3.8 ft below mudline (-14.0 to -16.0 ft CPD). No DDT was detected above 50 mg/kg in boreholes WB-2, WB-6, and WB-7.

In the Stage 2 boreholes, TLC DDT results exceeded 50 mg/kg in WB-8, WB-9, WB-10, WB-24, and WB-25. These boreholes are all located to the landward side of Dock 1. The higher concentrations of DDT (i.e., at or above 200 mg/kg) were observed in boreholes WB-9, WB-10, WB-24, and WB-25 at depths ranging from approximately 7 to 17 ft below mudline (-3 to -17 ft CPD). Selected sediment samples from the Stage 2 investigation were analyzed for pesticides and the results are presented in the following section.

2.3.2.2 Stage 2 Analytical Results

The DDT sediment concentrations are presented in Table 3 and in Figures 11 and 12 for surface and deeper sediments, respectively. Figure 12 also presents the data collected from the OSS shallow sediment samples in 1999 (Exponent 1999). Profiles of DDT concentrations in sediments are shown in Figure 10. In general, there is a reasonable correlation between the TLC and laboratory analyses for DDT, given the limitations with TLC methods (i.e., detection limit of 50 mg/kg and maximum detectable concentration of 500 mg/kg).

All surface sediment samples from the Stage 2 investigation were analyzed for DDT by EPA Method 8081A, except the samples collected from boreholes WB-22, WB-23, and WB-24. The surface sediment sample intervals varied based on recovery from 1.4 to 4.3 ft below mudline (if recovery was poor, the sample was composited over a larger interval). DDT concentrations greater than 1,000 μg/kg in surface sediments are generally confined to the landward side of the docks, except for the sample collected from borehole WB-17 (6,100 μg/kg). The highest DDT concentrations are found in the vicinity of Dock 1 and at the south end of Dock 2 (specifically borehole WB-13). Surface sediment DDT concentrations generally decrease to the east beyond the docks.

The highest DDT concentrations (i.e., greater than 100,000 μg/kg) in subsurface sediments were generally found 7 to 14.5 feet below mudline (elevations ranging from -4 to -17 ft CPD). These higher DDT concentrations were all found on the landward side of Dock 1

(boreholes WB-8, WB-9, WB-11, and WB-24). The highest DDT concentration (4,500,000 μg/kg) was found in borehole WB-9 at 8.0 to 10.0 ft below mudline (-2.9 to -4.9 ft CPD). Other DDT concentrations greater than 1,000 μg/kg were found in boreholes WB-10 (15,000 μg/kg and 19,000 μg/kg at 7.0 to 9.0 ft [-11.0 to -13.0 ft CPD] and 15.0 to 17.0 ft [-19.0 to -21.0 ft CPD] below mudline, respectively) and WB-18 (17,000 μg/kg from 6.0 to 8.0 ft below mudline [-4.5 to -6.5 ft CPD]). DDT concentrations were below 1,000 μg/kg in deeper sediments collected from boreholes WB-12, WB-13, WB-14, WB-15, WB-16, WB-17, WB-19, WB-20, WB-21, WB-22, WB-23, and WB-25.

2.4 GROUNDWATER RESULTS

Groundwater grab samples were collected at one or more depth intervals within each borehole, with the exception of boreholes WB-6 (groundwater sample in this area was collected from adjacent borehole WB-10), WB-17 (insufficient sediment thickness), and WB-24 (added to investigation as a sediment borehole only). Each groundwater sample was analyzed for VOCs by EPA Method 8260B, and for organochlorine pesticides by EPA Method 8081A. Selected groundwater samples were analyzed for conventional parameters (i.e., cations and anions). Stage 2 groundwater samples were also analyzed for perchlorate by EPA Method 314.0.

Relative surface water and groundwater level measurements were collected at each screened interval prior to groundwater sample collection (Table 1). The results of these measurements indicate that the potentiometric surface of groundwater in sediments is generally higher than the river level (typical head difference ranged between 0.1 and 1.0 ft). Some of the measurements, however, indicated a potentiometric surface of groundwater in sediments lower than the river level. The surface water potentiometric surface differences should be interpreted with caution because the groundwater levels were measured from temporary monitoring points and water levels may not represent a static equilibrated groundwater surface.

Groundwater field parameter results are presented in Table 4. Groundwater with the highest specific conductance was found in boreholes WB-4, WB-5, WB-8, WB-9, WB-10, WB-12, and WB-23, which are generally located downgradient of the salt pads on the southern portion of the ATOFINA facility. The pH values in groundwater ranged from acidic (5.25 in WB-7) to slightly alkaline (7.67 in the shallow interval from WB-3). Temperatures ranged from 5.15 (deep interval collected from WB-18) to 26.2 (deep interval from WB-5) degrees Celsius. The generally higher temperature of the Stage 1 groundwater samples may be attributable to warmer ambient air conditions during this portion of the investigation. Dissolved oxygen ranged from 0.760 (deep interval from WB-23) to 13.1 (deep interval from WB-4) mg/L and redox potential ranged from -166

millivolts (mV) (deep interval from WB-4) to 271 mV (deep interval from WB-10). Dissolved oxygen concentrations were generally lower in the deeper intervals.

Conventional parameter analytical results (Table 4) indicate that groundwater samples collected from the Stage 1 and 2 boreholes have higher cation and anion concentrations than the water sample collected from the Willamette River, confirming that groundwater in sediments beneath the river has a chemical signature that is distinct from Willamette River water. Elevated sodium and chloride concentrations were detected in groundwater samples collected from boreholes WB-9 and WB-10, which are located downgradient of the salt pads on the southern portion of the ATOFINA facility. This finding is consistent with high specific conductance measurements collected from boreholes in this area.

2.4.1 MCB and DDT

Groundwater sample analytical results for MCB and DDT are summarized in Tables 5 and 6, respectively, and are posted in Figures 13 and 14, respectively. The MCB and DDT concentrations in groundwater are also posted on the cross-sections (Figures 4a through 9b). A groundwater sample was not collected from WB-6; however, groundwater samples were collected from adjacent borehole WB-10, which generally represents the groundwater quality in this area.

The correlation between MCB and DDT concentrations in groundwater is generally good (compare Figures 13 and 14). The highest concentration of MCB in groundwater (64,000 µg/L) was detected in borehole WB-10 at a screened interval elevation of -18.0 to -22.0 CPD. This interval also had the highest DDT groundwater concentration (1,900 µg/L). The higher concentrations of MCB and DDT (greater than 1,000 µg/L and 10 µg/L, respectively) were confined to the landward side of Docks 1 and 2. The MCB and DDT concentrations outside of the docks were substantially lower than those on the landward side of the docks. MCB and DDT concentrations were lower than 250 µg/L and 2.5 µg/L, respectively, in all groundwater samples collected outside Docks 1 and 2.

2.4.2 Perchlorate

Groundwater samples collected from the Stage 2 boreholes were analyzed for perchlorate (Table 7 and Figure 15). Perchlorate was detected in groundwater samples collected from six boreholes in two general areas. The highest perchlorate concentrations were observed in the deeper sample intervals in the vicinity of the southern portion of Dock 1. In this area, perchlorate was detected in groundwater samples collected from boreholes WB-8, WB-12, and WB-23. The highest perchlorate concentration was detected in borehole WB-23 at 370,000 µg/L (screened interval elevation of -27.8 to -31.8 ft CPD). The highest concentrations in boreholes WB-8 and WB-23 were detected in the deep groundwater sample intervals.

Perchlorate was also detected at low concentrations (below 250 μg/L) in groundwater samples collected from boreholes WB-16, WB-18, and WB-20 in the vicinity of Dock 2.

2.5 QUALITY ASSURANCE/QUALITY CONTROL

The data validation reports summarize the results of the data quality review conducted for this investigation. Data validation qualifiers were assigned to selected results, as required by Functional Guidelines (US EPA 1994, 1999), because of exceedances of project or laboratory quality control criteria. Selected results were qualified as undetected (assigned a *U* qualifier) because of the detection of target analytes in associated laboratory or field blanks. Selected results were qualified as estimated (assigned a *J* qualifier) because of the exceedance of laboratory control limits for matrix spike results, surrogate recoveries, calibration verification, and other laboratory quality control samples. Selected results were rejected (assigned an *R* qualifier) because of quality control exceedances for instrument calibration. The data validation reports provide a summary of the qualifiers assigned and the rationale for the assignment of each data validation qualifier. The data validation reports for the Phase II data have been submitted to DEQ separately.

3. ANALYSIS OF PHASE II RESULTS

The following section presents an analysis of the Phase II Stage 1 and 2 investigation results in relation to the soil and groundwater results from the upland remedial investigation. Shallow sediment data collected in January 1999 (Exponent 1999) are included in the analysis because they provide additional data between the Phase II boreholes.

3.1 POTENTIAL SOURCES AND TRANSPORT PATHWAYS

This section discusses the potential sources and transport pathways that are inferred from the analysis of the upland groundwater and soil data and Phase II investigation groundwater and sediment data.

3.1.1 MCB in Groundwater

The highest MCB concentrations in sediment groundwater are located east and southeast of the former Acid Plant area, in an area generally confined to the landward side of Docks 1 and 2 (Figure 11). The MCB sediment groundwater concentrations are generally consistent with concentrations of MCB in upland groundwater immediately downgradient from the Acid Plant. The MCB concentrations in monitoring wells MWA-9i, MWA-10i, and MWA-17si are all of the same order-of-magnitude as the highest concentration measured in borehole WB-10 during the Phase II investigation.

Based on data from the upland groundwater monitoring well network, the groundwater gradients and groundwater flow directions in both the shallow and intermediate groundwater zones are generally along a line from the Acid Plant toward Dock 2. Even though the MCB plume extends in that direction in the nearshore sediments, higher concentrations of MCB were measured in sediment groundwater south and east of the Acid Plant area (Figure 11). The highest MCB concentration detected in sediment groundwater (64,000 μg/L) during the Phase II investigation was found in borehole WB-10 (adjacent to WB-6 on Dock 1) at a screened interval elevation of -18.0 to -22.0 ft CPD. In addition, residual NAPL was observed at only one location, borehole WB-6 at -24.3 to -24.4 ft CPD, near borehole WB-10.

These data suggest that MCB has been transported in groundwater from the Acid Plant area into the nearshore sediments adjacent to the Acid Plant area of the ATOFINA Portland Plant. Furthermore, the highest MCB concentrations in sediment groundwater appear to be related to stratigraphically controlled flow of historical discharges of MPR fluids into the former MPR pond and trench in the form of a dense non-aqueous phase

liquid (DNAPL). The DNAPL fluids likely migrated along more permeable sand beds within the finer-grained and less permeable sediments that slope to the southeast and generally emulate the slope of the basalt surface in the nearshore area.

3.1.2 DDT in Groundwater

There is a close correlation between MCB and DDT concentrations in groundwater both in the upland areas and in sediments (Figures 11 and 14). In selected samples, DDT concentrations in sediment groundwater are up to two orders-of-magnitude more than the aqueous solubility of DDT. Note, however, that because the groundwater samples were collected using the Geoprobe® temporary well screen that the introduction of fine suspended particulate matter could add a high-bias to the measured groundwater DDT concentrations. In general, the areas with exceedances of the aqueous solubility of DDT are collocated with areas of higher MCB concentrations, indicating a likely cosolvent relationship between DDT and MCB. The highest DDT concentration in sediment groundwater (1,900 μg/L) was measured at WB-10 at -18.0 to -22.0 ft CPD.

These data suggest that groundwater DDT concentrations generally covary with MCB concentrations because of the cosolvent relationship between MCB and DDT.

3.1.3 Perchlorate in Groundwater

The highest perchlorate concentrations in sediment groundwater are measured in boreholes immediately south and east of Dock 1 (Figure 15). The highest perchlorate groundwater concentrations (on the order of 160,000 to 370,000 μg/L) were measured in boreholes WB-12 (screened interval elevation of -37.9 to -41.9 ft CPD) and WB-23 (screened interval elevation of -27.8 to -31.8 ft CPD). Perchlorate was detected at 3,800 μg/L in borehole WB-8 at a screened interval elevation of -30.9 to -34.9 ft CPD. Lower concentrations of perchlorate were also detected in groundwater from boreholes WB-16, WB-18, and WB-20 in the vicinity of Dock 2.

Perchlorate concentrations in sediment groundwater are consistent with perchlorate measured in groundwater samples from upland monitoring wells. The highest concentrations of perchlorate are found in shallow groundwater zone monitoring wells in the Chlorate area (Figure 15). Perchlorate concentrations in groundwater from monitoring wells MWA-25 and MWA-27 range from 200,000 to 300,000 μg/L. Perchlorate concentrations attenuate 2 to 3 orders-of-magnitude in a hydraulically downgradient direction in the shallow groundwater zone. The highest perchlorate concentration in the intermediate groundwater zone is found in well MWA-32i (on the order of 200,000 μg/L), located immediately adjacent to well MWA-30 (on the order of 10,000 μg/L).

These data suggest that perchlorate is being transported from the Chlorate area downgradient to deeper groundwater intervals in the nearshore sediment area around Dock 1.

3.1.4 DDT in Sediments

DDT concentrations greater than 1,000 μg/kg in surface sediments are generally confined to the landward side of Docks 1 and 2 (except for an area just east of Dock 2; Figure 12). The highest DDT concentrations are found in the vicinity of Dock 1 (at WB-8) and in the southern portion of Dock 2 (near WB-13). DDT concentrations generally decrease to the east beyond the docks (Figure 12). The highest DDT concentration measured in surface sediments during the Phase II investigation was 34,000 μg/kg in the 0 to 4.3 ft surface interval at WB-8. The highest surface sediment DDT concentration measured during the 1999 RI sampling was 81,000 μg/kg at OSS002, which is located on the landward side of Dock 2.

The highest concentrations of DDT in deeper sediments are found on the landward side of Dock 1 in the vicinity of borehole WB-9 (Figure 13). The highest concentration of DDT in subsurface sediment is 4,500,000 μg/kg at 8 to 10 ft below mudline at WB-9. The DDT concentration in the shallowest interval (0 to 4 ft below mudline) from the same borehole was over two orders of magnitude lower (12,000 μg/kg). DDT concentrations of 3,500,000 μg/kg and 920,000 μg/kg were measured in WB-24 (10.6 to 12.6 ft below mudline) and WB-8 (6.8 to 9.3 ft below mudline), respectively.

These data suggest that the highest DDT concentrations in subsurface sediments are most likely the result of historical discharges from a temporary MPR discharge pipe that was located along the shoreline in the vicinity of borehole WB-9. DDT discharged from that pipe may have been deposited on the sediment surface and then buried by subsequent sediment deposition. Although there are no bathymetric data available from the time that discharge occurred, there is reason to believe that considerable sediment deposition may have occurred in this area. The shoreline inshore of the area between Docks 1 and 2 has been extended out into the river with fill during the intervening years, and some shoaling may have occurred in the vicinity of the boreholes with high subsurface DDT concentrations. The presence of the docks may tend to shelter this area, allowing greater deposition and accumulation of suspended river sediments. The hypothesized source of these high DDT concentrations in sediments well below the present mudline is further supported by the fact that the elevated DDT sediment concentrations in this area are not associated with elevated MCB concentrations in groundwater, indicating that they are not related to the transport of DDT in groundwater and are not related to the MCB groundwater plume emanating from the former Acid Plant area of the site.

3.2 DATA USABILITY FOR SOURCE CONTROL EVALUATION

This section summarizes the usability of the existing data set with respect to evaluation of potential source control measures at the site.

3.2.1 MCB and DDT in Groundwater

The existing MCB and DDT groundwater data are sufficient to evaluate source control measures in nearshore sediments. The existing data indicate that MCB and DDT in sediment groundwater are likely associated with the advective movement of MCB and DDT in groundwater from the uplands Acid Plant area of the site. Some of the areas with higher MCB and DDT concentrations may be related to the historical migration of MCB in the MPR from the former MPR pond and trench.

3.2.2 Perchlorate in Groundwater

The perchlorate concentrations in sediment groundwater in the vicinity of Dock 1 are consistent with perchlorate concentrations measured in shallow and intermediate groundwater on the upland portion of the site. The existing data indicate that perchlorate in sediment groundwater is likely associated with the advective movement of perchlorate in groundwater from the uplands Chlorate area.

3.2.3 MCB in Sediments

The existing MCB sediment data adequately characterize the sediments for potential source control measures appropriate for the site. The only visual evidence of residual NAPL characteristic of DDT MPR was from a very thin zone (0.1 ft thickness) in borehole WB-6. Although the sediment from the interval containing that thin zone did not yield a positive response in the Sudan IV® field screening for NAPL, there was limited sample available for screening. That sample interval did, however, have a high OVM measurement (3,000 ppm). MCB was found only in the dissolved phase in groundwater in the remainder of the Phase II boreholes.

MCB that is derived from residual NAPL beneath the MPR pond has been well characterized in upland soils in the former Acid Plant area and enough data are available to evaluate potential source control measures.

4. SUMMARY AND CONCLUSIONS

The results of the Phase II Investigation indicate that sediments and groundwater in the vicinity of Docks 1 and 2 have been affected by the migration of MCB, DDT, and perchlorate via historical MPR discharges or by groundwater migration. Sediments in the nearshore area are primarily fine-grained silts and clays with minor sand horizons. The sediments are underlain by basalt bedrock at depths of greater than 40 ft below mudline nearshore to less than 3 ft below mudline toward the river channel. The top of the underlying basalt surface generally slopes to the east. Thin sand beds are sometimes present and apparently dip to the east and may control the migration of COIs in groundwater in some locations.

Concentrations of MCB and DDT greater than 1,000 µg/L and 10 µg/L, respectively, in sediment groundwater are confined to the landward side of Docks 1 and 2. The MCB and DDT concentrations outside of the docks were substantially lower than those on the landward side of the docks. In groundwater samples collected outside Docks 1 and 2, MCB and DDT concentrations were all lower than 250 µg/L and 2.5 µg/L, respectively. The correlation between MCB and DDT concentrations in sediment groundwater is generally good, indicating a likely cosolvent relationship between these constituents. MCB and DDT in sediment groundwater are likely associated with the advective movement of MCB and DDT in groundwater from the uplands Acid Plant area of the site; however, in some areas MCB and DDT concentrations may also be from the dissolution of MCB that historically migrated from the former MPR pond and trench into the nearshore sediments. The existing MCB and DDT groundwater data are sufficient for evaluating potential source control measures.

Perchlorate concentrations greater than 1,000 µg/L were found in sediment groundwater in the vicinity of the southern portion of Dock 1. The existing data indicate that perchlorate in sediment groundwater is likely associated with the advective movement of perchlorate from the uplands Chlorate area.

In surface sediments, DDT concentrations greater than 1,000 µg/kg in surface sediments are generally confined to the landward side of the docks. The highest DDT concentrations are found in the vicinity of Dock 1 (at borehole WB-8) and inshore of the south end of Dock 2 (near borehole WB-13). DDT concentrations generally decrease to the east beyond the docks. The highest DDT concentrations (i.e., greater than 100,000 µg/kg) were found in deeper sediments from 7 to 14.5 feet below mudline on the landward side of Dock 1. The areas of highest sediment DDT concentrations appear to be associated with temporary MPR discharges from a pipe that was located along the shoreline in the vicinity of borehole WB-9. The bulk of the buried DDT mass appears to be associated

with discharges that occurred for a brief period of time more than 50 years ago. A very small portion of the DDT sediment mass may be associated with the ongoing cosolvent migration of MCB and DDT (as summarized above). The existing data set adequately characterizes the DDT in surface and subsurface sediments for the purpose of evaluating potential source control measures that may be appropriate for the area between Docks 1 and 2.

Ongoing and recently completed remedial activities at the ATOFINA site include the completion of the uplands remedial investigation, the completion of two phases of upland soil removal, and bench- and field-scale pilot studies for the in-situ treatment of MCB, perchlorate, and hexavalent chromium. The results of these ongoing studies will be used along with the data from this report to assess further source control evaluation alternatives.

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Tables

Table 1. Station coordinates and borehole elevation data for the Stage 1 and 2 boreholes

Borehole I.D.	Start Date	Latitude	Longitude	Barge Deck or Dock Elevation (ft)	Mudline Elevation (ft)	Basalt Elevation (ft)	Sediment Thickness (ft)	Shallow Groundwater Sample Interval: Upper Elevation (ft)	Shallow Groundwater Sample Interval: Lower Elevation (ft)	Shallow Groundwater Sample Interval: Upper Depth Below Mudline (ft)	Shallow Groundwater Sample Interval: Lower Depth Below Mudline (ft)	Ground-water elevation (ft)	River elevation (ft)
WB-1	6/3/02	45° 34' 19.4"	122° 44' 37.36"	36.6	7.6	-19.4	27.0	3.6	-0.4	4.0	8.0	12.1	11.8
WB-2	6/4/02	45° 34' 19.6"	122° 44' 36.9"	36.7	3.4	-14.3	17.7	-0.3	-4.3	3.7	7.7	12.3	12.2
WB-3	6/5/02	45° 34' 20"	122° 44' 36.5"	36.7	-2.3	-17.8	15.5	-5.3	-9.3	3.0	7.0	12.9	12.7
WB-4	6/6/02	45° 34' 14.9"	122° 44' 30.48"	36.3	6.6	-36.2	42.8	2.3	-1.7	4.3	8.3	12.5	12.5
WB-5	6/11/02	45° 34' 15.7"	122° 44' 29.8"	36.5	-12.2	-33.7	21.5	-17.5	-21.5	5.3	9.3	12.0	11.5
WB-6	6/7/02	45° 34' 16.5"	122° 44' 30.7"	36.6	-12.5	--	--	--	--	--	--	--	--
WB-7	6/11/02	45° 34' 17.46"	122° 44' 31.82"	37.1	-13.1	--	--	-23.9	-27.9	10.8	14.8	13.0	12.7
WB-8	2/28/03	45° 34' 15.72313"	122° 44' 30.91913"	8.6	2.9	-34.9	37.8	-7.4	-11.4	10.3	14.3	8.6	7.4
WB-9	3/4/03	45° 34' 16.01279"	122° 44' 32.21358"	10.1	5.1	-29.7	34.8	-9.9	-13.9	15.0	19.0	9.6	8.3
WB-10	3/5/03	45° 34' 16.33975"	122° 44' 31.04529"	10.0	-4.0	-32.2	28.2	-18.0	-22.0	14.0	18.0	10.1	8.8
WB-11	3/6/03	45° 34' 17.40241"	122° 44' 32.92170"	9.4	-2.1	-24.2	22.1	-13.6	-17.6	11.5	15.5	7.6	8.2
WB-12	2/19/03	45° 34' 15.80398"	122° 44' 28.21504"	10.1	-32.9	--	--	-37.9	-41.9	5.0	9.0	8.6	7.7
WB-13	2/26/03	45° 34' 18.50116"	122° 44' 35.07325"	8.8	0.8	-19.8	20.6	-4.2	-8.2	5.0	9.0	7.8	7.6
WB-14	2/27/03	45° 34' 18.90736"	122° 44' 34.52794"	8.5	-6.5	-28.5	22.0	-10.5	-14.5	4.0	8.0	7.5	7.2
WB-15	2/17/03	45° 34' 17.465"	122° 44' 30.036"	8.5	-35.5	-41.0	5.5	-36.8	-40.8	1.3	5.3	3.7 [b]	2.5 [b]
WB-16	2/19/03	45° 34' 19.05831"	122° 44' 32.77159"	11.5	-27.1	-31.9	4.8	-30.5	-31.5	3.4	4.4	10.9	9.0
WB-17	2/27/03	45° 34' 20.13637"	122° 44' 34.18409"	8.8	-25.2	-27.3	2.1	--	--	--	--	--	--
WB-18	2/25/03	45° 34' 21.21688"	122° 44' 38.47890"	9.5	1.5	-20.1	21.6	-3.5	-7.5	5.0	9.0	8.9	8.2
WB-19	2/24/03	45° 34' 21.36651"	122° 44' 35.97411"	9.9	-24.2	-28.2	4.0	-27.1	-28.1	2.9	3.9	10.3	7.4
WB-20	2/24/03	45° 34' 20.80447"	122° 44' 33.03850"	9.6	-36.9	-41.4	4.5	-39.4	-41.4	2.5	4.5	8.1	7.2
WB-21	2/20/03	45° 34' 18.09158"	122° 44' 29.44381"	10.3	-34.9	-43.1	8.2	-39.2	-43.2	4.3	8.3	9.2	8.0
WB-22	2/21/03	45° 34' 20.31419"	122° 44' 30.04633"	11.6	-38.9	--	--	-42.4	-46.4	3.5	7.5	9.9	9.2
WB-23	2/18/03	45° 34' 14.41471"	122° 44' 28.14914"	10.2	-11.2	-31.8	20.6	-14.8	-18.8	3.6	7.6	8.0	7.8
WB-24	3/7/03	45° 34' 16.70581"	122° 44' 32.59989"	10.0	0.6	--	--	--	--	--	--	--	--
WB-25	3/7/03	45° 34' 18.15890"	122° 44' 33.56621"	9.9	-4.4	-25.7	21.3	-16.1	-20.1	11.7	15.7	8.7	8.7

Table 1 (con't)

	Deep Groundwater Sample Interval						Additional Groundwater Sample Interval					
Borehole I.D.	Upper Elevation (ft)	Lower Elevation (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Ground-water elevation (ft)	River elevation (ft)	Upper Elevation (ft)	Lower Elevation (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Ground-water elevation (ft)	River elevation (ft)
WB-1	-11.4	-15.4	19.0	23.0	11.9	11.8	--	--	--	--	--	--
WB-2	-8.3	-12.3	11.7	15.7	8.4 [a]	12.2	--	--	--	--	--	--
WB-3	-13.3	-17.3	11.0	15.0	14.2	14.0	--	--	--	--	--	--
WB-4	-10.7	-14.7	17.3	21.3	12.7	12.5	-23.7	-27.7	30.3	34.3	12.5	12.5
WB-5	-27.5	-31.5	15.3	19.3	3.0 [a]	11.5	--	--	--	--	--	--
WB-6	--	--	--	--	--	--	--	--	--	--	--	--
WB-7	--	--	--	--	--	--	--	--	--	--	--	--
WB-8	-30.9	-34.9	33.8	37.8	7.1	7.3	--	--	--	--	--	--
WB-9	-25.9	-29.9	31.0	35.0	9.1	8.2	--	--	--	--	--	--
WB-10	-28.0	-32.0	24.0	28.0	8.9	8.9	--	--	--	--	--	--
WB-11	-21.6	-24.1	19.5	22.0	7.6	8.2	--	--	--	--	--	--
WB-12	--	--	--	--	--	--	--	--	--	--	--	--
WB-13	-15.7	-19.7	16.5	20.5	7.9	7.4	--	--	--	--	--	--
WB-14	-23.5	-27.5	17.0	21.0	7.7	7.2	--	--	--	--	--	--
WB-15	--	--	--	--	--	--	--	--	--	--	--	--
WB-16	--	--	--	--	--	--	--	--	--	--	--	--
WB-17	--	--	--	--	--	--	--	--	--	--	--	--
WB-18	-16.0	-20.0	17.5	21.5	9.0	8.2	--	--	--	--	--	--
WB-19	--	--	--	--	--	--	--	--	--	--	--	--
WB-20	--	--	--	--	--	--	--	--	--	--	--	--
WB-21	--	--	--	--	--	--	--	--	--	--	--	--
WB-22	--	--	--	--	--	--	--	--	--	--	--	--
WB-23	-27.8	-31.8	16.6	20.6	8.5	7.9	--	--	--	--	--	--
WB-24	--	--	--	--	--	--	--	--	--	--	--	--
WB-25	-24.1	-26.1	19.7	21.7	8.4	8.7	--	--	--	--	--	--

Note: -- not measured or data not available.

Note: Barge deck or dock elevation represents the initial elevation from which all relative borehole depths were measured. Groundwater samples were not collected from all boreholes. Some boreholes had only one groundwater sample interval. Vertical reference datum for elevations is City of Portland Datum, unless otherwise noted.

[a]The measured groundwater elevation may not represent a stabilized reading and therefore no intrepretation of potentiometric surface should be made using this measurement.

[b]Vertical reference datum was the Geoprobe rods rather than the City of Portland Datum

Table 2. Field screening results and analytical results for select pesticides in sediments from Stage 1 and 2 boreholes.

Sample Number	Survey Station	Date	Depth[a] (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Upper Depth Elevation[b] (ft)	Lower Depth Elevation[b] (ft)	OVM/PID (ppm)	Sudan IV Hydrophobic Dye[c]	4,4'-DDD (8081A) (µg/kg)	4,4'-DDE (8081A) (µg/kg)	4,4'-DDT (8081A) (µg/kg)	4,4'-DDT (TLC) (mg/kg)
SO1711	WB-1	6/3/2002	29–33	0.0	4.0	7.6	3.6	0	-	--	--	--	50 *U*
SO1712	WB-1	6/3/2002	33–37	4.0	8.0	3.6	-0.4	34	-	--	--	--	150
SO1713	WB-1	6/3/2002	37–39	8.0	10.0	-0.4	-2.4	86	-	--	--	--	50 *U*
SO1714	WB-1	6/3/2002	42–44	13.0	15.0	-5.4	-7.4	3.4	-	--	--	--	50 *U*
SO1715	WB-1	6/3/2002	44–46	15.0	17.0	-7.4	-9.4	3.4	-	--	--	--	50 *U*
SO1716	WB-1	6/3/2002	46–48	17.0	19.0	-9.4	-11.4	0	-	--	--	--	50 *U*
SO1717	WB-1	6/3/2002	48–50	19.0	21.0	-11.4	-13.4	0	-	--	--	--	50 *U*
SO1718	WB-1	6/3/2002	50–52	21.0	23.0	-13.4	-15.4	1.7	-	--	--	--	50 *U*
SO1719	WB-1	6/3/2002	52–54	23.0	25.0	-15.4	-17.4	1.7	-	--	--	--	50 *U*
SO1720	WB-1	6/3/2002	54–56	25.0	27.0	-17.4	-19.4	1.7	-	--	--	--	50 *U*
SO1721	WB-2	6/4/2002	33.3–35	0.0	1.7	3.4	1.7	8.1	-	--	--	--	50 *U*
SO1721Z	WB-2	6/4/2002	35–37	1.7	3.7	1.7	-0.3	0	-	--	--	--	50 *U*
SO1722	WB-2	6/4/2002	37–39	3.7	5.7	-0.3	-2.3	0	-	--	--	--	50 *U*
SO1723	WB-2	6/4/2002	39–41	5.7	7.7	-2.3	-4.3	0	-	--	--	--	50 *U*
SO1724	WB-2	6/4/2002	41–43	7.7	9.7	-4.3	-6.3	8.1	-	--	--	--	50 *U*
SO1725	WB-2	6/4/2002	43–45	9.7	11.7	-6.3	-8.3	16	-	--	--	--	50 *U*
SO1726	WB-2	6/4/2002	45–47	11.7	13.7	-8.3	-10.3	56	-	--	--	--	50 *U*
SO1727	WB-2	6/4/2002	47–49	13.7	15.7	-10.3	-12.3	15	-	--	--	--	50 *U*
SO1728	WB-2	6/4/2002	49–51	15.7	17.7	-12.3	-14.3	0	-	--	--	--	50 *U*
SO1729	WB-3	6/5/2002	39–41	0.0	2.0	-2.3	-4.3	2.8	-	--	--	--	50 *U*
SO1730	WB-3	6/5/2002	41–43	2.0	4.0	-4.3	-6.3	4.7	-	--	--	--	50 *U*
SO1731	WB-3	6/5/2002	45–47	6.0	8.0	-8.3	-10.3	2.8	-	--	--	--	100
SO1732	WB-3	6/5/2002	47–49	8.0	10.0	-10.3	-12.3	4.7	-	--	--	--	50 *U*
SO1733	WB-3	6/5/2002	49–51	10.0	12.0	-12.3	-14.3	4.7	-	--	--	--	50 *U*
SO1734	WB-3	6/5/2002	51–53	12.0	14.0	-14.3	-16.3	2.8	-	--	--	--	50 *U*
SO1734A	WB-3 (dup)	6/5/2002	51–53	12.0	14.0	-14.3	-16.3	NA	NA	--	--	--	50 *U*
SO1735	WB-3	6/5/2002	53–54.5	14.0	15.5	-16.3	-17.8	2.8	-	--	--	--	50 *U*
SO1736	WB-4	6/6/2002	29.7–32	0.0	2.3	6.6	4.3	7.3	-	--	--	--	50 *U*
SO1737	WB-4	6/6/2002	32–34	2.3	4.3	4.3	2.3	11	-	--	--	--	50 *U*
SO1738	WB-4	6/6/2002	34–36	4.3	6.3	2.3	0.3	7.3	-	--	--	--	200
SO1739	WB-4	6/6/2002	36–38	6.3	8.3	0.3	-1.7	3.5	-	--	--	--	50 *U*
SO1740	WB-4	6/6/2002	38–40	8.3	10.3	-1.7	-3.7	5.4	-	--	--	--	50 *U*

Table 2. (cont.)

Sample Number	Survey Station	Date	Depth[a] (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Upper Depth Elevation[b] (ft)	Lower Depth Elevation[b] (ft)	OVM/PID (ppm)	Sudan IV Hydrophobic Dye[c]	4,4'-DDD (8081A) (µg/kg)	4,4'-DDE (8081A) (µg/kg)	4,4'-DDT (8081A) (µg/kg)	4,4'-DDT (TLC) (mg/kg)
SO1741	WB-4	6/6/2002	40–42	10.3	12.3	-3.7	-5.7	5.4	-	--	--	--	50 *U*
SO1742	WB-4	6/6/2002	42–44	12.3	14.3	-5.7	-7.7	5.4	-	--	--	--	50 *U*
SO1743	WB-4	6/6/2002	44–46	14.3	16.3	-7.7	-9.7	5.4	-	--	--	--	50 *U*
SO1744	WB-4	6/6/2002	46–48	16.3	18.3	-9.7	-11.7	0	-	--	--	--	50 *U*
SO1745	WB-4	6/6/2002	48–50	18.3	20.3	-11.7	-13.7	1.8	-	--	--	--	50 *U*
SO1746	WB-4	6/6/2002	52–54	22.3	24.3	-15.7	-17.7	3.6	-	--	--	--	50 *U*
SO1747	WB-4	6/6/2002	54–56	24.3	26.3	-17.7	-19.7	5.4	-	--	--	--	50 *U*
SO1748	WB-4	6/6/2002	56–58	26.3	28.3	-19.7	-21.7	3.6	-	--	--	--	50 *U*
SO1749	WB-4	6/6/2002	58–60	28.3	30.3	-21.7	-23.7	3.6	-	--	--	--	50 *U*
SO1750	WB-4	6/6/2002	60–62	30.3	32.3	-23.7	-25.7	1.8	-	--	--	--	50 *U*
SO1751	WB-4	6/6/2002	62–64	32.3	34.3	-25.7	-27.7	3.6	-	--	--	--	50 *U*
SO1757	WB-4	6/10/2002	64–66	34.3	36.3	-27.7	-29.7	1.7	-	--	--	--	50 *U*
SO1758	WB-4	6/10/2002	66–68	36.3	38.3	-29.7	-31.7	0	-	--	--	--	50 *U*
SO1759	WB-4	6/10/2002	68–70	38.3	40.3	-31.7	-33.7	0	-	--	--	--	50 *U*
SO1760	WB-4	6/10/2002	70–72.5	40.3	42.8	-33.7	-36.2	0	-	--	--	--	50 *U*
SO1775	WB-5	6/11/2002	48.7–50.5	0.0	1.8	-12.2	-14.0	5.4	-	--	--	--	50 *U*
SO1775A	WB-5 (dup)	6/11/2002	48.7–50.5	0.0	1.8	-12.2	-14.0	NA	NA	--	--	--	50 *U*
SO1776	WB-5	6/11/2002	50.5–52.5	1.8	3.8	-14.0	-16.0	16	-	--	--	--	250
SO1777	WB-5	6/11/2002	60–62	11.3	13.3	-23.5	-25.5	280	-	--	--	--	150
SO1778	WB-5	6/11/2002	62–64	13.3	15.3	-25.5	-27.5	7.2	-	--	--	--	50 *U*
SO1779	WB-5	6/11/2002	64–66	15.3	17.3	-27.5	-29.5	3.6	-	--	--	--	50 *U*
SO1780	WB-5	6/11/2002	66–68	17.3	19.3	-29.5	-31.5	1.8	-	--	--	--	50 *U*
SO1781	WB-5	6/11/2002	68–70	19.3	21.3	-31.5	-33.5	5.4	-	--	--	--	50 *U*
SO1752	WB-6	6/7/2002	49.1–51	0.0	1.9	-12.5	-14.4	7.1	+[d]	--	--	--	50
SO1752A	WB-6 (dup)	6/7/2002	49.1–51	0.0	1.9	-12.5	-14.4	NA	NA	--	--	--	50
SO1753	WB-6	6/7/2002	51–53	1.9	3.9	-14.4	-16.4	8.9	-	--	--	--	50 *U*
SO1753A	WB-6 (dup)	6/7/2002	51–53	1.9	3.9	-14.4	-16.4	NA	NA	--	--	--	50 *U*
SO1754	WB-6	6/7/2002	55–59	5.9	9.9	-18.4	-22.4	310	-	--	--	--	50
SO1755	WB-6	6/7/2002	59–61	9.9	11.9	-22.4	-24.4	3,000	-[e]	--	--	--	50
SO1756	WB-6	6/7/2002	63–67	13.9	17.9	-26.4	-30.4	1,400	-	--	--	--	50
SO1761	WB-7	6/11/2002	50.2–52	0.0	1.8	-13.1	-14.9	3.6	-	--	--	--	50 *U*
SO1762	WB-7	6/11/2002	52–54	1.8	3.8	-14.9	-16.9	13	-	--	--	--	50 *U*

Table 2. (cont.)

Sample Number	Survey Station	Date	Depth[a] (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Upper Depth Elevation[b] (ft)	Lower Depth Elevation[b] (ft)	OVM/PID (ppm)	Sudan IV Hydrophobic Dye[c]	4,4'-DDD (8081A) (µg/kg)	4,4'-DDE (8081A) (µg/kg)	4,4'-DDT (8081A) (µg/kg)	4,4'-DDT (TLC) (mg/kg)
SO1763	WB-7	6/11/2002	54–56	3.8	5.8	-16.9	-18.9	120	+[d]	--	--	--	50 *U*
SO1764	WB-7	6/11/2002	56–58	5.8	7.8	-18.9	-20.9	56	-	--	--	--	50 *U*
SO1765	WB-7	6/11/2002	58–60	7.8	9.8	-20.9	-22.9	64	-	--	--	--	50 *U*
SO1766	WB-7	6/11/2002	61–63	10.8	12.8	-23.9	-25.9	57	-	--	--	--	50 *U*
SO1767	WB-7	6/11/2002	63–65	12.8	14.8	-25.9	-27.9	54	-	--	--	--	50 *U*
SO1915	WB-8	2/28/2003	5.7-10	0.0	4.3	2.9	-1.4	6.2	-	3,800	570 *J*	34,000	50 *U*
SO1916	WB-8	2/28/2003	10-12.5	4.3	6.8	-1.4	-3.9	12.0	-	--	--	--	50
SO1916D	WB-8 (dup)	2/28/2003	10-12.5	4.3	6.8	-1.4	-3.9	NA	NA	--	--	--	50
SO1917	WB-8	2/28/2003	12.5-15	6.8	9.3	-3.9	-6.4	12.0	-	470,000	9,000	920,000	100
SO1917D	WB-8 (dup)	2/28/2003	12.5-15	6.8	9.3	-3.9	-6.4	NA	NA	--	--	--	100
SO1918	WB-8	2/28/2003	15-17.5	9.3	11.8	-6.4	-8.9	15.5	-	--	--	--	50 *U*
SO1919	WB-8	2/28/2003	20-22	14.3	16.3	-11.4	-13.4	7.0	-	95	7.1 *U*	330	50 *U*
SO1920	WB-8	2/28/2003	22-24	16.3	18.3	-13.4	-15.4	5.4	-	--	--	--	50 *U*
SO1921	WB-8	2/28/2003	24-26	18.3	20.3	-15.4	-17.4	4.5	-	--	--	--	50 *U*
SO1922	WB-8	2/28/2003	26-28	20.3	22.3	-17.4	-19.4	6.2	-	--	--	--	50 *U*
SO1923	WB-8	2/28/2003	28-30	22.3	24.3	-19.4	-21.4	5.4	-	--	--	--	50 *U*
SO1924	WB-8	2/28/2003	30-32	24.3	26.3	-21.4	-23.4	5.4	-	--	--	--	50 *U*
SO1925	WB-8	2/28/2003	32-34	26.3	28.3	-23.4	-25.4	6.4	-	--	--	--	50 *U*
SO1926	WB-8	2/28/2003	34-36	28.3	30.3	-25.4	-27.4	7.0	-	--	--	--	50 *U*
SO1927	WB-8	2/28/2003	36-38	30.3	32.3	-27.4	-29.4	5.4	-	--	--	--	50 *U*
SO1928	WB-8	2/28/2003	38-40	32.3	34.3	-29.4	-31.4	7.0	-	--	--	--	50 *U*
SO1929	WB-8	2/28/2003	40-42	34.3	36.3	-31.4	-33.4	5.4	-	26	7.0 *U*	17	50 *U*
SO1930	WB-8	2/28/2003	42-43.8	36.3	38.1	-33.4	-35.2	2.0	-	--	--	--	50 *U*
SO1931	WB-9	3/4/2003	5-9	0.0	4.0	5.1	1.1	0.0	-	1,900	730	12,000	50 *U*
SO1932	WB-9	3/4/2003	9-11	4.0	6.0	1.1	-0.9	0.9	-	--	--	--	50 *U*
SO1933	WB-9	3/4/2003	11-13	6.0	8.0	-0.9	-2.9	3.4	-	--	--	--	50
SO1934	WB-9	3/4/2003	13-15	8.0	10.0	-2.9	-4.9	3.5	-	240,000	24,000	4,500,000	500
SO1934D	WB-9 (dup)	3/4/2003	13-15	8.0	10.0	-2.9	-4.9	NA	NA	--	--	--	500
SO1935	WB-9	3/4/2003	15-17	10.0	12.0	-4.9	-6.9	6.1	-	--	--	--	200
SO1936	WB-9	3/4/2003	17-19	12.0	14.0	-6.9	-8.9	0.0	-	--	--	--	50
SO1936D	WB-9 (dup)	3/4/2003	17-19	12.0	14.0	-6.9	-8.9	NA	NA	--	--	--	50
SO1937	WB-9	3/4/2003	21-23	16.0	18.0	-10.9	-12.9	0.0	-	--	--	--	50
SO1938	WB-9	3/4/2003	23-25	18.0	20.0	-12.9	-14.9	0.1	-	130 *U*	130 *U*	1,900	50 *U*

Table 2. (cont.)

Sample Number	Survey Station	Date	Depth[a] (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Upper Depth Elevation[b] (ft)	Lower Depth Elevation[b] (ft)	OVM/PID (ppm)	Sudan IV Hydrophobic Dye[c]	4,4'-DDD (8081A) (µg/kg)	4,4'-DDE (8081A) (µg/kg)	4,4'-DDT (8081A) (µg/kg)	4,4'-DDT (TLC) (mg/kg)
SO1939	WB-9	3/4/2003	25-27	20.0	22.0	-14.9	-16.9	0.4	-	--	--	--	50 *U*
SO1940	WB-9	3/4/2003	27-29	22.0	24.0	-16.9	-18.9	0.0	-	--	--	--	50 *U*
SO1941	WB-9	3/4/2003	29-31	24.0	26.0	-18.9	-20.9	0.0	-	--	--	--	50 *U*
SO1942	WB-9	3/4/2003	31-33	26.0	28.0	-20.9	-22.9	0.0	-	--	--	--	50 *U*
SO1943	WB-9	3/4/2003	33-35	28.0	30.0	-22.9	-24.9	0.0	-	--	--	--	50 *U*
SO1944	WB-9	3/4/2003	35-37	30.0	32.0	-24.9	-26.9	0.0	-	--	--	--	50 *U*
SO1945	WB-9	3/4/2003	37-39	32.0	34.0	-26.9	-28.9	0.0	-	20	6.6 *U*	240	50 *U*
SO1946	WB-9	3/4/2003	39-40.3	34.0	35.3	-28.9	-30.2	0.0	-	--	--	--	50 *U*
SO1947	WB-10	3/5/2003	14-16	0.0	2.0	-4.0	-6.0	4.8	-	950 *J*	160	4,000	50 *U*
SO1948	WB-10 (dup)	3/5/2003	14-16	0.0	2.0	-4.0	-6.0	NA	NA	830 *J*	190	4,000	--
SO1949	WB-10	3/5/2003	16-17.5	2.0	3.5	-6.0	-7.5	5.9	-	--	--	--	50
SO1950	WB-10	3/5/2003	17.5-19	3.5	5.0	-7.5	-9.0	8.0	-	--	--	--	150
SO1951	WB-10	3/5/2003	19-21	5.0	7.0	-9.0	-11.0	12.1	-	--	--	--	50
SO1952	WB-10	3/5/2003	21-23	7.0	9.0	-11.0	-13.0	8.0	-	4,600	660 *J*	15,000	200
SO1953	WB-10	3/5/2003	23-26	9.0	12.0	-13.0	-16.0	6.7	-	--	--	--	50
SO1954	WB-10	3/5/2003	26-28	12.0	14.0	-16.0	-18.0	32.2	-	--	--	--	50
SO1955	WB-10	3/5/2003	28-29	14.0	15.0	-18.0	-19.0	117	-	--	--	--	100
SO1956	WB-10	3/5/2003	29-31	15.0	17.0	-19.0	-21.0	2280	-	640,000	4,300 *U*	19,000	50
SO1956D	WB-10 (dup)	3/5/2003	29-31	15.0	17.0	-19.0	-21.0	NA	NA	--	--	--	50
SO1957	WB-10	3/5/2003	31-33	17.0	19.0	-21.0	-23.0	271	-	--	--	--	50
SO1958	WB-10	3/5/2003	33-35	19.0	21.0	-23.0	-25.0	24.3	-	--	--	--	50
SO1959	WB-10	3/5/2003	35-37	21.0	23.0	-25.0	-27.0	8.9	-	--	--	--	50 *U*
SO1960	WB-10	3/5/2003	37-39	23.0	25.0	-27.0	-29.0	5.8	-	--	--	--	50 *U*
SO1961	WB-10	3/5/2003	39-41	25.0	27.0	-29.0	-31.0	3.5	-	28	6.6 *U*	6.6 *U*	50 *U*
SO1962	WB-10	3/5/2003	41-42.7	27.0	28.7	-31.0	-32.7	1.1	-	--	--	--	50 *U*
SO1963	WB-11	3/6/2003	11.5-13.5	0.0	2.0	-2.1	-4.1	4.4	-	1,300 *J*	400 *J*	3,500 *J*	50 *U*
SO1964	WB-11	3/6/2003	13.5-15	2.0	3.5	-4.1	-5.6	3.7	-	--	--	--	50
SO1965	WB-11	3/6/2003	15-20	3.5	8.5	-5.6	-10.6	14.8	-	--	--	--	50
SO1966	WB-11	3/6/2003	20-24	8.5	12.5	-10.6	-14.6	109	-	--	--	--	50
SO1967	WB-11	3/6/2003	24-26	12.5	14.5	-14.6	-16.6	1230	-	690,000	5,700 *U*	110,000	50
SO1968	WB-11	3/6/2003	26-28	14.5	16.5	-16.6	-18.6	78.5	-	--	--	--	50
SO1969	WB-11	3/6/2003	28-30	16.5	18.5	-18.6	-20.6	12.8	-	--	--	--	50 *U*
SO1970	WB-11	3/6/2003	30-32	18.5	20.5	-20.6	-22.6	21.4	-	--	--	--	50 *U*

Table 2. (cont.)

Sample Number	Survey Station	Date	Depth[a] (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Upper Depth Elevation[b] (ft)	Lower Depth Elevation[b] (ft)	OVM/PID (ppm)	Sudan IV Hydrophobic Dye[c]	4,4'-DDD (8081A) (µg/kg)	4,4'-DDE (8081A) (µg/kg)	4,4'-DDT (8081A) (µg/kg)	4,4'-DDT (TLC) (mg/kg)
SO1971	WB-11	3/6/2003	32-33.8	20.5	22.3	-22.6	-24.4	13.5	-	36	6.4 *U*	6.4 *U*	50 *U*
SO1870	WB-12	2/19/2003	43-44.5	0.0	1.5	-32.9	-34.4	2.1	-	42 *J*	25 *J*	100 *J*	50 *U*
SO1871	WB-12	2/19/2003	44.5-46.5	1.5	3.5	-34.4	-36.4	0.7	-	--	--	--	50 *U*
SO1872	WB-12	2/19/2003	46.5-48	3.5	5.0	-36.4	-37.9	2.2	-	--	--	--	50 *U*
SO1896	WB-13	2/26/2003	8-11.5	0.0	3.5	0.8	-2.7	3.2	-	8,200	780	26,000	50 *U*
SO1897	WB-13	2/26/2003	11-13	3.0	5.0	-2.2	-4.2	7.4	-	--	--	--	50 *U*
SO1898	WB-13	2/26/2003	13-15	5.0	7.0	-4.2	-6.2	5.7	-	--	--	--	50 *U*
SO1899	WB-13	2/26/2003	15-20	7.0	12.0	-6.2	-11.2	6.5	-	--	--	--	50
SO1900	WB-13	2/26/2003	20-22.5	12.0	14.5	-11.2	-13.7	12.3	-	--	--	--	50
SO1901	WB-13	2/26/2003	22.5-25	14.5	17.0	-13.7	-16.2	25.5	-	460	75 *U*	610	50
SO1902	WB-13	2/26/2003	25-27.5	17.0	19.5	-16.2	-18.7	28.8	-	--	--	--	50 *U*
SO1903	WB-13	2/26/2003	27.5-28.5	19.5	20.5	-18.7	-19.7	16.4	-	--	--	--	50 *U*
SO1906	WB-14	2/27/2003	15-17	0.0	2.0	-6.5	-8.5	13.8	-	810	150 *J*	1,400	50 *U*
SO1907	WB-14	2/27/2003	17-19	2.0	4.0	-8.5	-10.5	16.2	-	--	--	--	50 *U*
SO1908	WB-14	2/27/2003	19-20	4.0	5.0	-10.5	-11.5	14.6	-	--	--	--	50 *U*
SO1909	WB-14	2/27/2003	20-25	5.0	10.0	-11.5	-16.5	8.9	-	--	--	--	50 *U*
SO1910	WB-14	2/27/2003	25-27.5	10.0	12.5	-16.5	-19.0	14.6	-	--	--	--	50 *U*
SO1911	WB-14	2/27/2003	27.5-31	12.5	16.0	-19.0	-22.5	18.7	-	--	--	--	50 *U*
SO1912	WB-14	2/27/2003	31-33	16.0	18.0	-22.5	-24.5	--	-	6.9 *U*	6.9 *U*	6.9 *U*	50 *U*
SO1913	WB-14	2/27/2003	33-35	18.0	20.0	-24.5	-26.5	--	-	--	--	--	50 *U*
SO1914	WB-14	2/27/2003	35-37	20.0	22.0	-26.5	-28.5	--	-	--	--	--	50 *U*
SO1850	WB-15	2/17/2003	44-46	0.0	2.0	-35.5	-37.5	0	-	80 *J*	25 *J*	290 *J*	50 *U*
SO1851	WB-15	2/17/2003	46-47	2.0	3.0	-37.5	-38.5	0	-	--	--	--	50 *U*
SO1852	WB-15	2/17/2003	47-49	3.0	5.0	-38.5	-40.5	0	-	--	--	--	50 *U*
SO1853	WB-15	2/17/2003	49-49.5	5.0	5.5	-40.5	-41.0	3.0	-	--	--	--	50 *U*
SO1854	WB-15	2/17/2003	49.5-50	5.5	6.0	-41.0	-41.5	0	-	--	--	--	50 *U*
SO1867	WB-16	2/19/2003	38.6-40.5	0.0	1.9	-27.1	-29.0	8.1	-	39 *J*	11 *UJ*	130 *J*	50 *U*
SO1868	WB-16	2/19/2003	40.5-43.3	1.9	4.7	-29.0	-31.8	11.8	-	--	--	--	50 *U*
SO1904	WB-17	2/27/2003	34-36	0.0	2.0	-25.2	-27.2	7.3	-	320 *J*	92 *U*	6,100	50 *U*

Table 2. (cont.)

Sample Number	Survey Station	Date	Depth[a] (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Upper Depth Elevation[b] (ft)	Lower Depth Elevation[b] (ft)	OVM/PID (ppm)	Sudan IV Hydrophobic Dye[c]	4,4'-DDD (8081A) (µg/kg)	4,4'-DDE (8081A) (µg/kg)	4,4'-DDT (8081A) (µg/kg)	4,4'-DDT (TLC) (mg/kg)
SO1905	WB-17	2/27/2003	36-36.2	2.0	2.2	-27.2	-27.4	13.0	-	--	--	--	50 *U*
SO1888	WB-18	2/25/2003	8-10	0.0	2.0	1.5	-0.5	5.1	-	1,200	350	8,000	50 *U*
SO1889	WB-18	2/25/2003	12-14	4.0	6.0	-2.5	-4.5	5.1	-	--	--	--	50 *U*
SO1890	WB-18	2/25/2003	14-16	6.0	8.0	-4.5	-6.5	9.3	-	3,600	650 *J*	17,000	50
SO1890D	WB-18 (dup)	2/25/2003	14-16	6.0	8.0	-4.5	-6.5	NA	NA	--	--	--	50
SO1891	WB-18	2/25/2003	16-18	8.0	10.0	-6.5	-8.5	5.1	-	--	--	--	50
SO1892	WB-18	2/25/2003	18-20	10.0	12.0	-8.5	-10.5	6.7	-	--	--	--	50
SO1893	WB-18	2/25/2003	20-24	12.0	16.0	-10.5	-14.5	5.9	-	--	--	--	50 *U*
SO1894	WB-18	2/25/2003	24-28	16.0	20.0	-14.5	-18.5	6.7	-	220	6.5 *U*	150	50 *U*
SO1895	WB-18	2/25/2003	28-29.7	20.0	21.7	-18.5	-20.2	6.7	-	--	--	--	50 *U*
SO1885	WB-19	2/24/2003	34.1-35.5	0.0	1.4	-24.2	-25.6	3.6	-	310	100	620	50 *U*
SO1886	WB-19	2/24/2003	35.5-37	1.4	2.9	-25.6	-27.1	4.5	-	--	--	--	50 *U*
SO1887	WB-19	2/24/2003	37-38	2.9	3.9	-27.1	-28.1	5.4	-	--	--	--	50 *U*
SO1882	WB-20	2/24/2003	46.5-48.5	0.0	2.0	-36.9	-38.9	1.7	-	24 *J*	11 *UJ*	67 *J*	50 *U*
SO1883	WB-20	2/24/2003	48.5-51	2.0	4.5	-38.9	-41.4	3.5	-	--	--	--	50 *U*
SO1884	WB-20	2/24/2003	51-51.9	4.5	5.4	-41.4	-42.3	3.5	-	--	--	--	50 *U*
SO1873	WB-21	2/20/2003	45.2-47	0.0	1.8	-34.9	-36.7	2.6	-	29 *J*	9.1 *UJ*	37 *J*	50 *U*
SO1874	WB-21	2/20/2003	47-49	1.8	3.8	-36.7	-38.7	2.6	-	--	--	--	50 *U*
SO1875	WB-21	2/20/2003	49-51	3.8	5.8	-38.7	-40.7	4.7	-	--	--	--	50 *U*
SO1876	WB-21	2/20/2003	51-52.3	5.8	7.1	-40.7	-42.0	4.0	-	--	--	--	50 *U*
SO1877	WB-22	2/21/2003	50.5-52	0.0	1.5	-38.9	-40.4	6.3[f]	-	--	--	--	50 *U*
SO1878	WB-22	2/21/2003	52-54	1.5	3.5	-40.4	-42.4	5.3[f]	-	--	--	--	50 *U*
SO1879	WB-22	2/21/2003	54-55.8	3.5	5.3	-42.4	-44.2	5.3[f]	-	14 *U*	8.1	15 *U*	50 *U*
SO1880	WB-22	2/21/2003	56-60	5.5	9.5	-44.4	-48.4	6.3[f]	-	--	--	--	50 *U*
SO1881	WB-22	2/21/2003	60-62.5	9.5	12.0	-48.4	-50.9	6.3[f]	-	--	--	--	50 *U*
SO1855	WB-23	2/18/2003	21.4-23	0.0	1.6	-11.2	-12.8	1.0	-	--	--	--	50 *U*
SO1856	WB-23	2/18/2003	23-25	1.6	3.6	-12.8	-14.8	1.0	-	--	--	--	50 *U*
SO1857	WB-23	2/18/2003	25-29	3.6	7.6	-14.8	-18.8	1.0	-	--	--	--	50 *U*
SO1858	WB-23	2/18/2003	26-28	4.6	6.6	-15.8	-17.8	1.7	-	230	21 *U*	450	50 *U*

Table 2. (cont.)

Sample Number	Survey Station	Date	Depth[a] (ft)	Upper Depth Below Mudline (ft)	Lower Depth Below Mudline (ft)	Upper Depth Elevation[b] (ft)	Lower Depth Elevation[b] (ft)	OVM/PID (ppm)	Sudan IV Hydrophobic Dye[c]	4,4'-DDD (8081A) (µg/kg)	4,4'-DDE (8081A) (µg/kg)	4,4'-DDT (8081A) (µg/kg)	4,4'-DDT (TLC) (mg/kg)
SO1859	WB-23	2/18/2003	28-30	6.6	8.6	-17.8	-19.8	2.7	-	--	--	--	50 *U*
SO1860	WB-23	2/18/2003	30-32	8.6	10.6	-19.8	-21.8	2.7	-	--	--	--	50 *U*
SO1861	WB-23	2/18/2003	32-34	10.6	12.6	-21.8	-23.8	2.7	-	--	--	--	50 *U*
SO1862	WB-23	2/18/2003	34-36	12.6	14.6	-23.8	-25.8	2.7	-	--	--	--	50 *U*
SO1863	WB-23	2/18/2003	36-38	14.6	16.6	-25.8	-27.8	2.4	-	--	--	--	50 *U*
SO1864	WB-23	2/18/2003	38-40	16.6	18.6	-27.8	-29.8	2.4	-	11 *U*	6.7 *U*	6.7 *U*	50 *U*
SO1865	WB-23	2/18/2003	40-42	18.6	20.6	-29.8	-31.8	2.0	-	--	--	--	50 *U*
SO1972	WB-24	3/7/2003	20-22	10.6	12.6	-10.0	-12.0	316	-	130,000	13,000	3,500,000	250
SO1973	WB-24	3/7/2003	22-24	12.6	14.6	-12.0	-14.0	337	-	--	--	--	200
SO1974	WB-24	3/7/2003	24-26	14.6	16.6	-14.0	-16.0	23.9	-	--	--	--	200
SO1975	WB-24	3/7/2003	26-28	16.6	18.6	-16.0	-18.0	9.5	-	89 *J*	6.9 *U*	27,000	50 *U*
SO1976	WB-24	3/7/2003	28-30	18.6	20.6	-18.0	-20.0	4.2	-	--	--	--	50 *U*
SO1977	WB-24	3/7/2003	30-32	20.6	22.6	-20.0	-22.0	10.5	-	--	--	--	50 *U*
SO1978	WB-25	3/7/2003	14.3-16	0.0	1.7	-4.4	-6.1	1.5	-	--	--	--	50
SO1979	WB-25 (dup)	3/7/2003	14.3-16	0.0	1.7	-4.4	-6.1	NA	NA	350 *J*	110 *UJ*	1,200 *J*	--
SO1980	WB-25	3/7/2003	16-18	1.7	3.7	-6.1	-8.1	0.0	-	--	--	--	50
SO1981	WB-25	3/7/2003	18-20	3.7	5.7	-8.1	-10.1	0.2	-	--	--	--	50
SO1982	WB-25	3/7/2003	20-25	5.7	10.7	-10.1	-15.1	0.1	-	--	--	--	100
SO1983	WB-25	3/7/2003	25-27	10.7	12.7	-15.1	-17.1	1.0	-	10	7.4 *U*	24	200
SO1984	WB-25	3/7/2003	27-29	12.7	14.7	-17.1	-19.1	1.0	-	--	--	--	50 *U*
SO1985	WB-25	3/7/2003	29-31	14.7	16.7	-19.1	-21.1	8.5	-	7.1 *U*	7.1 *U*	11	50 *U*
SO1985DUP	WB-25 (dup)	3/7/2003	29-31	14.7	16.7	-19.1	-21.1	NA	NA	6.9 *U*	6.9 *U*	14	--
SO1986	WB-25	3/10/2003	31-32.5	16.7	18.2	-21.1	-22.6	4.4	-	--	--	--	50 *U*
SO1987	WB-25	3/10/2003	32.5-34.5	18.2	20.2	-22.6	-24.6	0.0	-	--	--	--	50 *U*
SO1988	WB-25	3/10/2003	34.5-36	20.2	21.7	-24.6	-26.1	0.0	-	6.2 *U*	6.2 *U*	6.2 *U*	50 *U*

Notes on following page

Table 2. (cont.)

Note: -- not analyzed
- negative hydrophobic dye screening result
NA - not applicable
OVM - organic vapor monitor
PID - photoionization detector
TLC - thin layer chromatography
U - undetected at detection limit shown
J - estimated

[a] All depths for WB-1 to WB-7 measured from dock surface. All depths for WB-8 to WB-25 measured from barge deck.

[b] Vertical reference datum is City of Portland Benchmark

[c] A negative indicates that nonaqueous phase liquids (NAPLs) were not present and a positive indicates the presence of NAPLs.

[d] NAPL detection is attributed to an organic compound other than monochlorobenzene, perhaps petroleum hydrocarbons based on visual evidence and OVM measurements.

[e] Limited sample was available for hydrophobic dye screening from this interval. NAPL was not detected with hydrophobic dye; however, residual NAPL characteristic of DDT manufacturing process residue was visually observed in a sample from a depth of 60.9-61 ft below the dock surface.

[f] OVM measurement taken in office laboratory within 3 hours of borehole completion.

Table 3. Pesticide results for sediment samples from the Stage 2 boreholes.

			WB-8	WB-8	WB-8	WB-8	WB-9	WB-9	WB-9	WB-9
			2/28/2003	2/28/2003	2/28/2003	2/28/2003	3/4/2003	3/4/2003	3/4/2003	3/4/2003
			SO1915	SO1917	SO1919	SO1929	SO1931	SO1934	SO1938	SO1945
	Depth below mudline (ft)		0.0 to 4.3	6.8 to 9.3	14.3 to 16.3	34.3 to 36.3	0.0 to 4.0	8.0 to 10.0	18.0 to 20.0	32.0 to 34.0
	Elevation (ft CPD)		2.9 to -1.4	-3.9 to -6.4	-11.4 to -13.4	-31.4 to -33.4	5.1 to 1.1	-2.9 to -4.9	-12.9 to -14.9	-26.9 to -28.9
Chemical	Method	Units								
4,4'-DDD	8081A	µg/kg	3,800	470,000	95	26	1,900	240,000	130 *U*	20
4,4'-DDE	8081A	µg/kg	570 *J*	9,000	7.1 *U*	7.0 *U*	730	24,000	130 *U*	6.6 *U*
4,4'-DDT	8081A	µg/kg	34,000	920,000	330	17	12,000	4,500,000	1,900	240
Aldrin	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,800 *U*	130 *U*	6.6 *U*
alpha-Chlordane	8081A	µg/kg	120 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
alpha-Endosulfan	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
alpha-Hexachlorocyclohexane	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
beta-Endosulfan	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *UJ*	38,000 *U*	130 *U*	6.6 *U*
beta-Hexachlorocyclohexane	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
delta-Hexachlorocyclohexane	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
Dieldrin	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
Endosulfan sulfate	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
Endrin	8081A	µg/kg	70 *UJ*	80 *U*	7.1 *U*	7.0 *U*	64 *UJ*	22,000 *U*	130 *U*	6.6 *U*
Endrin aldehyde	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *UJ*	1,400 *U*	130 *U*	6.6 *U*
Endrin ketone	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
gamma-Chlordane	8081A	µg/kg	70 *U*	93 *U*	7.1 *U*	7.0 *U*	170 *J*	1,400 *U*	130 *U*	6.6 *U*
gamma-Hexachlorocyclohexane	8081A	µg/kg	76 *U*	80 *U*	7.1 *U*	7.0 *U*	110 *U*	1,400 *U*	130 *U*	6.6 *U*
Heptachlor	8081A	µg/kg	70 *U*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
Heptachlor epoxide	8081A	µg/kg	70 *U*	83 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
Methoxychlor	8081A	µg/kg	70 *UJ*	80 *U*	7.1 *U*	7.0 *U*	64 *U*	1,400 *U*	130 *U*	6.6 *U*
Toxaphene	8081A	µg/kg	15,000 *U*	22,000 *U*	430 *U*	350 *U*	3,900 *U*	110,000 *U*	6,500 *U*	970 *U*

Table 3. (cont.)

			WB-10	WB-10 (dup)	WB-10	WB-10	WB-10	WB-11	WB-11	WB-11
			3/5/2003	3/5/2003	3/5/2003	3/5/2003	3/5/2003	3/6/2003	3/6/2003	3/6/2003
			SO1947	SO1948	SO1952	SO1956	SO1961	SO1963	SO1967	SO1971
	Depth below mudline (ft)		0.0 to 2.0	0.0 to 2.0	7.0 to 9.0	15.0 to 17.0	25.0 to 27.0	0.0 to 2.0	12.5 to 14.5	20.5 to 22.3
	Elevation (ft CPD)		-4.0 to -6.0	-4.0 to -6.0	-11.0 to -13.0	-19.0 to -21.0	-29.0 to -31.0	-2.1 to -4.1	-14.6 to -16.6	-22.6 to -24.4
Chemical	Method	Units								
4,4'-DDD	8081A	µg/kg	950 *J*	830 *J*	4,600	640,000	28	1,300 *J*	690,000	36
4,4'-DDE	8081A	µg/kg	160	190	660 *J*	4,300 *U*	6.6 *U*	400 *J*	5,700 *U*	6.4 *U*
4,4'-DDT	8081A	µg/kg	4,000	4,000	15,000	19,000	6.6 *U*	3,500 *J*	110,000	6.4 *U*
Aldrin	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
alpha-Chlordane	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
alpha-Endosulfan	8081A	µg/kg	94 *U*	95 *U*	180 *U*	270 *U*	6.6 *U*	97 *U*	310 *U*	6.4 *U*
alpha-Hexachlorocyclohexane	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.6 *U*
beta-Endosulfan	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
beta-Hexachlorocyclohexane	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
delta-Hexachlorocyclohexane	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
Dieldrin	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
Endosulfan sulfate	8081A	µg/kg	94 *U*	100	180 *U*	170 *U*	6.6 *U*	290	190 *U*	6.4 *U*
Endrin	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
Endrin aldehyde	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
Endrin ketone	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	120	190 *U*	6.4 *U*
gamma-Chlordane	8081A	µg/kg	140 *J*	150 *U*	180 *U*	440 *U*	6.6 *U*	370 *U*	440 *U*	6.4 *U*
gamma-Hexachlorocyclohexane	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
Heptachlor	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
Heptachlor epoxide	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	110	190 *U*	6.4 *U*
Methoxychlor	8081A	µg/kg	94 *U*	95 *U*	180 *U*	170 *U*	6.6 *U*	97 *U*	190 *U*	6.4 *U*
Toxaphene	8081A	µg/kg	5,500 *U*	5,000 *U*	17,000 *U*	13,000 *U*	430 *U*	9,200 *U*	9,200 *U*	320 *U*

Table 3. (cont.)

			WB-12	WB-13	WB-13	WB-14	WB-14	WB-15	WB-16	WB-17
			2/19/2003	2/26/2003	2/26/2003	2/27/2003	2/27/2003	2/17/2003	2/19/2003	2/27/2003
			SO1870	SO1896	SO1901	SO1906	SO1912	SO1850	SO1867	SO1904
	Depth below mudline (ft)		0.0 to 1.5	0.0 to 3.5	14.5 to 17.0	0.0 to 2.0	16.0 to 18.0	0.0 to 2.0	0.0 to 1.9	0.0 to 2.0
	Elevation (ft CPD)		-32.9 to -34.4	0.8 to -2.7	-13.7 to -16.2	-6.5 to -8.5	-22.5 to -24.5	-35.5 to -37.5	-27.1 to -29.0	-25.2 to -27.2
Chemical	Method	Units								
4,4'-DDD	8081A	µg/kg	42 *J*	8,200	460	810	6.9 *U*	80 *J*	39 *J*	320 *J*
4,4'-DDE	8081A	µg/kg	25 *J*	780	75 *U*	150 *J*	6.9 *U*	25 *J*	11 *UJ*	92 *U*
4,4'-DDT	8081A	µg/kg	100 *J*	26,000	610	1,400	6.9 *U*	290 *J*	130 *J*	6,100
Aldrin	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
alpha-Chlordane	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
alpha-Endosulfan	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
alpha-Hexachlorocyclohexane	8081A	µg/kg	11 *UJ*	76 *U*	120	97 *U*	240 *U*	11 *UJ*	11 *UJ*	92 *U*
beta-Endosulfan	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
beta-Hexachlorocyclohexane	8081A	µg/kg	11 *UJ*	77	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
delta-Hexachlorocyclohexane	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Dieldrin	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Endosulfan sulfate	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Endrin	8081A	µg/kg	11 *UJ*	93 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Endrin aldehyde	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Endrin ketone	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
gamma-Chlordane	8081A	µg/kg	11 *UJ*	110 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
gamma-Hexachlorocyclohexane	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Heptachlor	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Heptachlor epoxide	8081A	µg/kg	11 *UJ*	89	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Methoxychlor	8081A	µg/kg	11 *UJ*	76 *U*	75 *U*	97 *U*	6.9 *U*	11 *UJ*	11 *UJ*	92 *U*
Toxaphene	8081A	µg/kg	530 *UJ*	7,800 *U*	3,800 *U*	4,900 *U*	350 *U*	530 *UJ*	570 *UJ*	4,600 *U*

Table 3. (cont.)

			WB-18	WB-18	WB-18	WB-19	WB-20	WB-21	WB-22	WB-23
			2/25/2003	2/25/2003	2/25/2003	2/24/2003	2/24/2003	2/20/2003	2/21/2003	2/18/2003
			SO1888	SO1890	SO1894	SO1885	SO1882	SO1873	SO1879	SO1858
	Depth below mudline (ft)		0.0 to 2.0	6.0 to 8.0	16.0 to 20.0	0.0 to 1.4	0.0 to 2.0	0.0 to 1.8	3.5 to 5.3	4.6 to 6.6
	Elevation (ft CPD)		1.5 to -0.5	-4.5 to -6.5	-14.5 to -18.5	-24.2 to -25.6	-36.9 to -38.9	-34.9 to -36.7	-42.4 to -44.2	-15.8 to -17.8
Chemical	Method	Units								
4,4'-DDD	8081A	µg/kg	1,200	3,600	220	310	24 *J*	29 *J*	14 *U*	230
4,4'-DDE	8081A	µg/kg	350	650 *J*	6.5 *U*	100	11 *UJ*	9.1 *UJ*	8.1	21 *U*
4,4'-DDT	8081A	µg/kg	8,000	17,000	150	620	67 *J*	37 *J*	15 *U*	450
Aldrin	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
alpha-Chlordane	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
alpha-Endosulfan	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
alpha-Hexachlorocyclohexane	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
beta-Endosulfan	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
beta-Hexachlorocyclohexane	8081A	µg/kg	120	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
delta-Hexachlorocyclohexane	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Dieldrin	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Endosulfan sulfate	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Endrin	8081A	µg/kg	190 *J*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Endrin aldehyde	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Endrin ketone	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
gamma-Chlordane	8081A	µg/kg	410 *J*	190 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
gamma-Hexachlorocyclohexane	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Heptachlor	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Heptachlor epoxide	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Methoxychlor	8081A	µg/kg	81 *U*	150 *U*	6.5 *U*	88 *U*	11 *UJ*	9.1 *UJ*	7.1 *U*	7.8 *U*
Toxaphene	8081A	µg/kg	17,000 *U*	22,000 *U*	330 *U*	4,400 *U*	520 *UJ*	460 *UJ*	360 *U*	400 *U*

Table 3. (cont.)

			WB-23	WB-24	WB-24	WB-25	WB-25	WB-25	WB-25 (dup)	WB-25
			2/18/2003	3/7/2003	3/7/2003	3/7/2003	3/7/2003	3/7/2003	3/7/2003	3/10/2003
			SO1864	SO1972	SO1975	SO1979	SO1983	SO1985	SO1985DUP	SO1988
	Depth below mudline (ft)		16.6 to 18.6	10.6 to 12.6	16.6 to 18.6	0.0 to 1.7	10.7 to 12.7	14.7 to 16.7	14.7 to 16.7	20.2 to 21.7
	Elevation (ft CPD)		-27.8 to -29.8	-10.0 to -12.0	-16.0 to -18.0	-4.4 to -6.1	-15.1 to -17.1	-19.1 to -21.1	-19.1 to -21.1	-24.6 to -26.1
Chemical	Method	Units								
4,4'-DDD	8081A	µg/kg	11 *U*	130,000	89 *J*	350 *J*	10	7.1 *U*	6.9 *U*	6.2 *U*
4,4'-DDE	8081A	µg/kg	6.7 *U*	13,000	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
4,4'-DDT	8081A	µg/kg	6.7 *U*	3,500,000	27,000	1,200 *J*	24	11	14	6.2 *U*
Aldrin	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
alpha-Chlordane	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
alpha-Endosulfan	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
alpha-Hexachlorocyclohexane	8081A	µg/kg	6.7 *U*	1,800 *U*	230 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
beta-Endosulfan	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
beta-Hexachlorocyclohexane	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
delta-Hexachlorocyclohexane	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Dieldrin	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Endosulfan sulfate	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	130 *J*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Endrin	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Endrin aldehyde	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Endrin ketone	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
gamma-Chlordane	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	160 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
gamma-Hexachlorocyclohexane	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Heptachlor	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Heptachlor epoxide	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Methoxychlor	8081A	µg/kg	6.7 *U*	1,800 *U*	6.9 *U*	110 *UJ*	7.4 *U*	7.1 *U*	6.9 *U*	6.2 *U*
Toxaphene	8081A	µg/kg	340 *U*	90,000 *U*	350 *U*	5,500 *UJ*	710 *U*	360 *U*	350 *U*	310 *U*

Note: *J* - estimated
U - undetected at detection limit shown
CPD - City of Portland Datum

Table 4. Cation, anion, and field parameter results for groundwater samples from the Stage 1 and 2 boreholes and Willamette River water.

			WB-1	WB-1	WB-2	WB-2	WB-3	WB-3	WB-3 (dup)
			6/4/2002	6/4/2002	6/4/2002	6/4/2002	6/5/2002	6/6/2002	6/6/2002
			GW06040201	GW06040202	GW06040203	GW06040204	GW06050201	GW06060201	GW06060202
	Depth below mudline (ft)		4.0 to 8.0	19.0 to 23.0	3.7 to 7.7	11.7 to 15.7	3.0 to 7.0	11.0 to 15.0	11.0 to 15.0
	Elevation (ft CPD)		3.6 to -0.4	-11.4 to -15.4	-0.3 to -4.3	-8.3 to -12.3	-5.3 to -9.3	-13.3 to -17.3	-13.3 to -17.3
Chemical	Method	Units							
Cations									
Calcium	6010B	mg/L	150	86	140	120	1300	40	26
Magnesium	6010B	mg/L	130	59	130	74	530	19	12
Potassium	6010B	mg/L	23	15	11	13	20	4 *U*	4 *U*
Sodium	6010B	mg/L	140	1,200	240	190	41	110	68
Anions									
Bicarbonate	2320B	mg/L	69	550	420	380	750	140	120
Sulfate	300.0	mg/L	25	100	5.8	4.1	3.0	4.4	4.2
Total alkalinity	310.1	mg/L	--	--	--	--	--	--	--
Total chloride	300.0	mg/L	130	1,500	570	500	11	920 *J*	340 *J*
Field Parameters									
Conductivity	SOP	μS/cm	619	4,910	2,960	2,340	4,830	7,770	7,770
Dissolved oxygen	SOP	mg/L	10.4	10.0	10.7	9.86	9.34	2.52	2.52
Oxidation Reduction Potential	SOP	mV	--	--	--	--	247	2.00	2.00
pH	SOP	pH	5.27	6.76	6.90	6.23	7.67	7.15	7.15
Temperature	SOP	degC	15.3	16.4	22.9	20.8	20.3	14.1	14.1
Turbidity	SOP	NTU	--	--	--	--	--	--	--

Table 4. (cont.)

			WB-4	WB-4	WB-4	WB-5	WB-5	WB-7	WB-8
			6/10/2002	6/10/2002	6/10/2002	6/11/2002	6/11/2002	6/12/2002	2/28/2003
			GW06100201	GW06100202	GW06100203	GW06110202	GW06110203	GW06120202	GW02280301
	Depth below mudline (ft)		8.3 to 4.3	17.3 to 21.3	30.3 to 34.3	5.3 to 9.3	15.3 to 19.3	10.8 to 14.8	10.3 to 14.3
	Elevation (ft CPD)		2.3 to -1.7	-10.7 to -14.7	-23.7 to -27.7	-17.5 to -21.5	-27.5 to -31.5	-23.9 to -27.9	-7.4 to -11.4
Chemical	Method	Units							
Cations									
Calcium	6010B	mg/L	--	--	--	--	--	--	--
Magnesium	6010B	mg/L	--	--	--	--	--	--	--
Potassium	6010B	mg/L	--	--	--	--	--	--	--
Sodium	6010B	mg/L	--	--	--	--	--	--	--
Anions									
Bicarbonate	2320B	mg/L	--	--	--	--	--	--	--
Sulfate	300.0	mg/L	--	--	--	--	--	--	--
Total alkalinity	310.1	mg/L	--	--	--	--	--	--	--
Total chloride	300.0	mg/L	--	--	--	--	--	--	--
Field Parameters									
Conductivity	SOP	μS/cm	12,500	18,600	55,400	3,020	50,200	3,540	5,260
Dissolved oxygen	SOP	mg/L	11.4	12.4	13.1	8.78	8.36	8.87	2.07
Oxidation Reduction Potential	SOP	mV	36.0	42.0	–166	35.0	–91.0	141	200
pH	SOP	pH	7.03	6.65	6.28	6.43	6.26	5.25	6.34
Temperature	SOP	degC	16.5	20.0	21.8	23.4	26.2	20.6	8.59
Turbidity	SOP	NTU	--	--	--	--	--	--	999

Table 4. (cont.)

			WB-8	WB-9	WB-9	WB-10	WB-10	WB-10 (dup)	WB-11
			2/28/2003	3/4/2003	3/4/2003	3/5/2003	3/6/2003	3/6/2003	3/7/2003
			GW02280302	GW03040301	GW03040302	GW03050302	GW03060301	GW03060302	GW03070302
	Depth below mudline (ft)		33.8 to 37.8	15.0 to 19.0	31.0 to 35.0	14.0 to 18.0	24.0 to 28.0	24.0 to 28.0	11.5 to 15.5
	Elevation (ft CPD)		-30.9 to -34.9	-9.9 to -13.9	-25.9 to -29.9	-18.0 to -22.0	-28.0 to -32.0	-28.0 to -32.0	-13.6 to -17.6
Chemical	Method	Units							
Cations									
Calcium	6010B	mg/L	--	200	2,000	810	550	540	--
Magnesium	6010B	mg/L	--	66	270	600	190	180	--
Potassium	6010B	mg/L	--	19	85	28	62	60	--
Sodium	6010B	mg/L	--	4,200	8,800	2,100	8,200	8,300	--
Anions									
Bicarbonate	2320B	mg/L	--	710	2.0 *U*	540	650	640	--
Sulfate	300.0	mg/L	--	160	1,600	3,200	260	260	--
Total alkalinity	310.1	mg/L	--	710	2.0 *U*	540	650	640	--
Total chloride	300.0	mg/L	--	5,300	13,000	3,800	8,400	12,000	--
Field Parameters									
Conductivity	SOP	µS/cm	91,400	23,700	55,500	19,000	50,700	--	1,670
Dissolved oxygen	SOP	mg/L	1.08	1.60	1.91	3.39	1.72	--	3.74
Oxidation Reduction Potential	SOP	mV	2.88	78.0	124	29.0	271	--	192
pH	SOP	pH	5.56	6.70	3.85 [a]	5.53	5.59	--	6.61
Temperature	SOP	degC	8.07	8.67	9.14	10.9	7.09	--	6.58
Turbidity	SOP	NTU	184	162	262	314	40.9	--	311

Table 4. (cont.)

			WB-11	WB-12	WB-13	WB-13	WB-14	WB-14	WB-15
			3/7/2003	2/20/2003	2/26/2003	2/26/2003	2/27/2003	2/27/2003	2/17/2003
			GW03070301	GW02200301	GW02260303	GW02260304	GW02270301	GW02270302	GW02170301
	Depth below mudline (ft)		19.5 to 22.0	5.0 to 9.0	5.0 to 9.0	16.5 to 20.5	4.0 to 8.0	17.0 to 21.0	1.3 to 5.3
	Elevation (ft CPD)		-21.6 to -24.1	-37.9 to -41.9	-4.2 to -8.2	-15.7 to -19.7	-10.5 to -14.5	-23.5 to -27.5	-36.8 to -40.8
Chemical	Method	Units							
Cations									
Calcium	6010B	mg/L	--	--	--	--	--	--	60
Magnesium	6010B	mg/L	--	--	--	--	--	--	23
Potassium	6010B	mg/L	--	--	--	--	--	--	3.8
Sodium	6010B	mg/L	--	--	--	--	--	--	440
Anions									
Bicarbonate	2320B	mg/L	--	--	--	--	--	--	83
Sulfate	300.0	mg/L	--	--	--	--	--	--	22
Total alkalinity	310.1	mg/L	--	--	--	--	--	--	83
Total chloride	300.0	mg/L	--	--	--	--	--	--	530 *J*
Field Parameters									
Conductivity	SOP	μS/cm	5,580	99,900	3,660	11,400	213	10,900	1,520
Dissolved oxygen	SOP	mg/L	3.08	1.39	6.23	1.68	6.07	1.06	9.08
Oxidation Reduction Potential	SOP	mV	212	9.00	96.0	152	190	142	-2.00
pH	SOP	pH	5.60	5.54	6.97	6.48	5.86	6.03	6.96
Temperature	SOP	degC	5.34	9.50	11.2	11.2	12.7	14.5	8.50
Turbidity	SOP	NTU	26.1	140	590	57.6	82.7	62.3	379

Table 4. (cont.)

			WB-16	WB-18	WB-18	WB-19	WB-20	WB-21	WB-22
			2/19/2003	2/25/2003	2/26/2003	2/25/2003	2/24/2003	2/20/2003	2/21/2003
			GW02190301	GW02250302	GW02260301	GW02250301	GW02240301	GW02200302	GW02210301
	Depth below mudline (ft)		3.4 to 4.4	5.0 to 9.0	17.5 to 21.5	2.9 to 3.9	2.5 to 4.5	4.3 to 8.3	3.5 to 7.5
	Elevation (ft CPD)		-30.5 to -31.5	-3.5 to -7.5	-16.0 to -20.0	-27.1 to -28.1	-39.4 to -41.4	-39.2 to -43.2	-42.4 to -46.4
Chemical	Method	Units							
Cations									
Calcium	6010B	mg/L	--	--	--	--	18	--	33
Magnesium	6010B	mg/L	--	--	--	--	8.3	--	14
Potassium	6010B	mg/L	--	--	--	--	2.1	--	2.6 J
Sodium	6010B	mg/L	--	--	--	--	21	--	23
Anions									
Bicarbonate	2320B	mg/L	--	--	--	--	38	--	100
Sulfate	300.0	mg/L	--	--	--	--	11	--	16
Total alkalinity	310.1	mg/L	--	--	--	--	38	--	100
Total chloride	300.0	mg/L	--	--	--	--	56	--	56
Field Parameters									
Conductivity	SOP	μS/cm	237	470	16,100	191	278	1,640	530
Dissolved oxygen	SOP	mg/L	6.55	8.50	1.04	4.07	6.86	3.76	2.42
Oxidation Reduction Potential	SOP	mV	9.00	4.00	171	9.00	7.00	-4.00	-2.00
pH	SOP	pH	5.85	6.58	6.66	5.49	5.83	6.09	6.15
Temperature	SOP	degC	9.70	8.75	5.15	6.83	8.26	9.30	11.5
Turbidity	SOP	NTU	319	192	580	86.5	24.6	244	442

Table 4. (cont.)

			WB-23	WB-23	WB-25	WB-25	WL-RIVER
			2/18/2003	2/18/2003	3/10/2003	3/10/2003	2/24/2003
			GW02180301	GW02180302	GW03100301	GW03100302	GW02240302
	Depth below mudline (ft)		3.6 to 7.6	16.6 to 20.6	11.7 to 15.7	19.7 to 21.7	--
	Elevation (ft CPD)		-14.8 to -18.8	-27.8 to -31.8	-16.1 to -20.1	-24.1 to -26.1	--
Chemical	Method	Units					
Cations							
Calcium	6010B	mg/L	--	--	--	--	7.4
Magnesium	6010B	mg/L	--	--	--	--	2.5
Potassium	6010B	mg/L	--	--	--	--	2 *U*
Sodium	6010B	mg/L	--	--	--	--	5
Anions							
Bicarbonate	2320B	mg/L	--	--	--	--	24
Sulfate	300.0	mg/L	--	--	--	--	3.6
Total alkalinity	310.1	mg/L	--	--	--	--	24
Total chloride	300.0	mg/L	--	--	--	--	3.2
Field Parameters							
Conductivity	SOP	µS/cm	2,710	52,900	4,370	7,480	106
Dissolved oxygen	SOP	mg/L	5.57	0.760	2.88	1.75	12.5
Oxidation Reduction Potential	SOP	mV	5.00	4.00	158	44.0	3.00
pH	SOP	pH	6.32	6.19	5.76	5.86	7.20
Temperature	SOP	degC	10.2	11.8	13.6	16.3	7.56
Turbidity	SOP	NTU	272	999	221	462	10.0

Note: -- not analyzed or measured

J - estimated

U - undetected at detection limit shown

SOP - standard operating procedure as outlined in *Elf Atochem Acid Plant Area Remedial Investigation and Feasibility Study Work Plan* (Exponent 1998).

CPD - City of Portland Datum

[a] - pH value may have been collected prior to stabilization.

Table 5. Volatile organic compound results for groundwater samples from the Stage 1 and 2 boreholes

			WB-1	WB-1	WB-2	WB-2	WB-3	WB-3	WB-3 (dup)
			6/4/2002	6/4/2002	6/4/2002	6/4/2002	6/5/2002	6/6/2002	6/6/2002
			GW06040201	GW06040202	GW06040203	GW06040204	GW06050201	GW06060201	GW06060202
	Depth below mudline (ft)		4.0 to 8.0	19.0 to 23.0	3.7 to 7.7	11.7 to 15.7	3.0 to 7.0	11.0 to 15.0	11.0 to 15.0
	Elevation (ft CPD)		3.6 to -0.4	-11.4 to -15.4	-0.3 to -4.3	-8.3 to -12.3	-5.3 to -9.3	-13.3 to -17.3	-13.3 to -17.3
Chemical	Method	Units							
1,1,1,2-Tetrachloroethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,1-Trichloroethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,2,2-Tetrachloroethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,2-Trichloroethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1-Dichloroethane	8260B	µg/L	13 *U*	1.3	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1-Dichloroethene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1-Dichloropropene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,2,3-Trichlorobenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
1,2,3-Trichloropropane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,2,4-Trichlorobenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
1,2,4-Trimethylbenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
1,2-Dibromo-3-chloropropane	8260B	µg/L	50 *UR*	2.0 *UR*	10 *UR*	4.0 *UR*	2.0 *UR*	2.0 *UR*	2.0 *UR*
1,2-Dibromoethane	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2-Dichlorobenzene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
1,2-Dichloroethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,2-Dichloropropane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,3,5-Trimethylbenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
1,3-Dichlorobenzene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
1,3-Dichloropropane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,4-Dichlorobenzene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
2,2-Dichloropropane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2-Butanone	8260B	µg/L	500 *UR*	20 *UR*	100 *UR*	40 *UR*	20 *UR*	20 *UR*	20 *UR*
2-Chlorotoluene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
2-Hexanone	8260B	µg/L	500 *U*	20 *U*	100 *U*	40 *U*	20 *U*	20 *U*	20 *U*
4-Chlorotoluene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
4-Isopropyltoluene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
4-Methyl-2-pentanone	8260B	µg/L	500 *UR*	20 *UR*	100 *UR*	40 *UR*	20 *UR*	20 *UR*	20 *UR*
Acetone	8260B	µg/L	500 *UR*	20 *UR*	100 *UR*	40 *UR*	20 *UR*	20 *UR*	20 *UR*
Benzene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
Bromobenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
Bromochloromethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromodichloromethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromoform	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromomethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*

Table 5. (cont.)

			WB-1	WB-1	WB-2	WB-2	WB-3	WB-3	WB-3 (dup)
			6/4/2002	6/4/2002	6/4/2002	6/4/2002	6/5/2002	6/6/2002	6/6/2002
			GW06040201	GW06040202	GW06040203	GW06040204	GW06050201	GW06060201	GW06060202
	Depth below mudline (ft)		4.0 to 8.0	19.0 to 23.0	3.7 to 7.7	11.7 to 15.7	3.0 to 7.0	11.0 to 15.0	11.0 to 15.0
	Elevation (ft CPD)		3.6 to -0.4	-11.4 to -15.4	-0.3 to -4.3	-8.3 to -12.3	-5.3 to -9.3	-13.3 to -17.3	-13.3 to -17.3
Chemical	Method	Units							
Carbon disulfide	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Carbon tetrachloride	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Chlorobenzene	8260B	µg/L	980	13	240	47	1.8 *J*	70	100
Chloroethane	8260B	µg/L	13 *UR*	0.50 *UR*	2.5 *UR*	1.0 *UR*	0.50 *UR*	0.50 *UR*	0.50 *UR*
Chloroform	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Chloromethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
cis-1,2-Dichloroethene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
cis-1,3-Dichloropropene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dibromochloromethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dibromomethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dichlorodifluoromethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Ethylbenzene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
Hexachlorobutadiene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Isopropylbenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
meta & *para* Xylenes	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
Methylene chloride	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Naphthalene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.9 *J*	2.0 *U*	2.0 *U*
n-Butylbenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
n-Propylbenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
ortho-Xylene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.5 *UJ*	0.5 *U*	0.5 *U*
sec-Butylbenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
Styrene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
tert-Butylbenzene	8260B	µg/L	50 *U*	2.0 *U*	10 *U*	4.0 *U*	2.0 *UJ*	2.0 *U*	2.0 *U*
Tetrachloroethene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Toluene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*
trans-1,2-Dichloroethene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
trans-1,3-Dichloropropene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Trichloroethene	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Trichlorofluoromethane	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Vinyl chloride	8260B	µg/L	13 *U*	0.50 *U*	2.5 *U*	1.0 *U*	0.50 *U*	0.50 *U*	0.50 *U*

Table 5. (cont.)

			WB-4	WB-4	WB-4	WB-5	WB-5	WB-7	WB-8
			6/10/2002	6/10/2002	6/10/2002	6/11/2002	6/11/2002	6/12/2002	2/28/2003
			GW06100201	GW06100202	GW06100203	GW06110202	GW06110203	GW06120202	GW02280301
	Depth below mudline (ft)		8.3 to 4.3	17.3 to 21.3	30.3 to 34.3	5.3 to 9.3	15.3 to 19.3	10.8 to 14.8	10.3 to 14.3
	Elevation (ft CPD)		2.3 to -1.7	-10.7 to -14.7	-23.7 to -27.7	-17.5 to -21.5	-27.5 to -31.5	-23.9 to -27.9	-7.4 to -11.4
Chemical	Method	Units							
1,1,1,2-Tetrachloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,1,1-Trichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,1,2,2-Tetrachloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,1,2-Trichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,1-Dichloroethane	8260B	µg/L	0.77	0.59	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,1-Dichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,1-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,2,3-Trichlorobenzene	8260B	µg/L	2.0 *UJ*	2.0 *UJ*	4.0 *UJ*	20 *U*	2.0 *U*	100 *U*	20 *U*
1,2,3-Trichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	10 *U*	1.0 *U*	50 *U*	5.0 *U*
1,2,4-Trichlorobenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
1,2,4-Trimethylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
1,2-Dibromo-3-chloropropane	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
1,2-Dibromoethane	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
1,2-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,2-Dichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,2-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,3,5-Trimethylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
1,3-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,3-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
1,4-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
2,2-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
2-Butanone	8260B	µg/L	20 *UR*	20 *UR*	40 *UR*	200 *U*	20 *U*	1,000 *U*	200 *UR*
2-Chlorotoluene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
2-Hexanone	8260B	µg/L	20 *U*	20 *U*	40 *U*	200 *U*	20 *U*	1,000 *U*	200 *UR*
4-Chlorotoluene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
4-Isopropyltoluene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
4-Methyl-2-pentanone	8260B	µg/L	20 *UR*	20 *UR*	40 *UR*	200 *U*	20 *U*	1,000 *U*	200 *UR*
Acetone	8260B	µg/L	20 *UR*	20 *UR*	40 *UR*	200 *UR*	20 *UR*	1,000 *UR*	200 *UR*
Benzene	8260B	µg/L	0.68	0.50 *U*	1.0 *U*	5.0 *U*	0.59	25 *U*	5.0 *U*
Bromobenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
Bromochloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Bromodichloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	4.2	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Bromoform	8260B	µg/L	0.50 *U*	0.56	7.5	10.0 *U*	1.0 *U*	50 *U*	5.0 *U*
Bromomethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *UJ*	0.50 *UJ*	25 *UJ*	5.0 *U*

Table 5. (cont.)

			WB-4	WB-4	WB-4	WB-5	WB-5	WB-7	WB-8
			6/10/2002	6/10/2002	6/10/2002	6/11/2002	6/11/2002	6/12/2002	2/28/2003
			GW06100201	GW06100202	GW06100203	GW06110202	GW06110203	GW06120202	GW02280301
	Depth below mudline (ft)		8.3 to 4.3	17.3 to 21.3	30.3 to 34.3	5.3 to 9.3	15.3 to 19.3	10.8 to 14.8	10.3 to 14.3
	Elevation (ft CPD)		2.3 to -1.7	-10.7 to -14.7	-23.7 to -27.7	-17.5 to -21.5	-27.5 to -31.5	-23.9 to -27.9	-7.4 to -11.4
Chemical	Method	Units							
Carbon disulfide	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Carbon tetrachloride	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	10 *U*	1.0 *U*	50 *U*	5.0 *U*
Chlorobenzene	8260B	µg/L	47	1.4	3.1	2,200	38 *J*	18,000	2,800
Chloroethane	8260B	µg/L	0.50 *UR*	0.50 *UR*	1.0 *UR*	5.0 *U*	0.50 *U*	140	5.0 *U*
Chloroform	8260B	µg/L	0.50 *U*	12	270	5.0 *U*	6.4	54	5.0 *U*
Chloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
cis-1,2-Dichloroethene	8260B	µg/L	0.50 *U*	0.84	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
cis-1,3-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Dibromochloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	3.5	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Dibromomethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.9	10 *U*	1.0 *U*	50 *U*	5.0 *U*
Dichlorodifluoromethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Ethylbenzene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Hexachlorobutadiene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
Isopropylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
meta & para Xylenes	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Methylene chloride	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
Naphthalene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
n-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
n-Propylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
ortho-Xylene	8260B	µg/L	0.5 *U*	0.5 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
sec-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
Styrene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
tert-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	4.0 *U*	20 *U*	2.0 *U*	100 *U*	20 *U*
Tetrachloroethene	8260B	µg/L	1.5	0.89	1.0	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Toluene	8260B	µg/L	0.54	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
trans-1,2-Dichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
trans-1,3-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Trichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Trichlorofluoromethane	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*
Vinyl chloride	8260B	µg/L	0.50 *U*	0.50 *U*	1.0 *U*	5.0 *U*	0.50 *U*	25 *U*	5.0 *U*

Table 5. (cont.)

			WB-8	WB-9	WB-9	WB-10	WB-10	WB-10 (dup)	WB-11
			2/28/2003	3/4/2003	3/4/2003	3/5/2003	3/6/2003	3/6/2003	3/7/2003
			GW02280302	GW03040301	GW03040302	GW03050302	GW03060301	GW03060302	GW03070302
	Depth below mudline (ft)		33.8 to 37.8	15.0 to 19.0	31.0 to 35.0	14.0 to 18.0	24.0 to 28.0	24.0 to 28.0	11.5 to 15.5
	Elevation (ft CPD)		-30.9 to -34.9	-9.9 to -13.9	-25.9 to -29.9	-18.0 to -22.0	-28.0 to -32.0	-28.0 to -32.0	-13.6 to -17.6
Chemical	Method	Units							
1,1,1,2-Tetrachloroethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
1,1,1-Trichloroethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
1,1,2,2-Tetrachloroethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
1,1,2-Trichloroethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
1,1-Dichloroethane	8260B	µg/L	0.54	13 *U*	5.0 *U*	5.0 *J*	1.4	2.5 *U*	50 *U*
1,1-Dichloroethene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
1,1-Dichloropropene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
1,2,3-Trichlorobenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
1,2,3-Trichloropropane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
1,2,4-Trichlorobenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
1,2,4-Trimethylbenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
1,2-Dibromo-3-chloropropane	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
1,2-Dibromoethane	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	20 *U*	5.0 *U*	10 *U*	200 *U*
1,2-Dichlorobenzene	8260B	µg/L	0.50 *U*	110	5.0 *U*	15 *J*	1.3 *U*	2.5 *U*	50 *U*
1,2-Dichloroethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	41 *J*	1.3 *U*	2.5 *U*	50 *U*
1,2-Dichloropropane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
1,3,5-Trimethylbenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
1,3-Dichlorobenzene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	1.0 *J*	1.3 *U*	2.5 *U*	50 *U*
1,3-Dichloropropane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
1,4-Dichlorobenzene	8260B	µg/L	0.50 *U*	150	5.0 *U*	49 *J*	1.3 *U*	2.5 *U*	50 *U*
2,2-Dichloropropane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
2-Butanone	8260B	µg/L	20 *UR*	500 *UR*	200 *UR*	260 *J*	50 *UR*	100 *UR*	2,000 *UR*
2-Chlorotoluene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
2-Hexanone	8260B	µg/L	20 *UR*	500 *UR*	200 *UR*	200 *UR*	50 *UR*	100 *UR*	2,000 *U*
4-Chlorotoluene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
4-Isopropyltoluene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
4-Methyl-2-pentanone	8260B	µg/L	20 *UR*	500 *UR*	200 *UR*	20 *UR*	50 *UR*	100 *UR*	2,000 *UR*
Acetone	8260B	µg/L	20 *UR*	500 *UR*	200 *UR*	1,300 *J*	50 *UR*	100 *UR*	2,000 *UR*
Benzene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	52 *J*	1.3 *U*	2.5 *U*	50 *U*
Bromobenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
Bromochloromethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
Bromodichloromethane	8260B	µg/L	13	13 *U*	5.0 *U*	0.50 *U*	2.6	2.7	50 *U*
Bromoform	8260B	µg/L	13	13 *U*	5.0 *U*	5.0 *U*	1.5	2.5 *U*	50 *U*
Bromomethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *UJ*

Table 5. (cont.)

			WB-8	WB-9	WB-9	WB-10	WB-10	WB-10 (dup)	WB-11
			2/28/2003	3/4/2003	3/4/2003	3/5/2003	3/6/2003	3/6/2003	3/7/2003
			GW02280302	GW03040301	GW03040302	GW03050302	GW03060301	GW03060302	GW03070302
	Depth below mudline (ft)		33.8 to 37.8	15.0 to 19.0	31.0 to 35.0	14.0 to 18.0	24.0 to 28.0	24.0 to 28.0	11.5 to 15.5
	Elevation (ft CPD)		-30.9 to -34.9	-9.9 to -13.9	-25.9 to -29.9	-18.0 to -22.0	-28.0 to -32.0	-28.0 to -32.0	-13.6 to -17.6
Chemical	Method	Units							
Carbon disulfide	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	13 *J*	1.3 *U*	2.5 *U*	50 *U*
Carbon tetrachloride	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
Chlorobenzene	8260B	µg/L	28	12,000	2,800	64,000	1,200	1,100	32,000
Chloroethane	8260B	µg/L	0.50 *U*	57	5.0 *U*	96 *J*	1.6	2.5 *U*	50 *U*
Chloroform	8260B	µg/L	490	150	25	38 *J*	120	130	50 *U*
Chloromethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
cis-1,2-Dichloroethene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	8.6 *J*	1.3	2.5 *U*	50 *U*
cis-1,3-Dichloropropene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
Dibromochloromethane	8260B	µg/L	5.7	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
Dibromomethane	8260B	µg/L	1.5	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
Dichlorodifluoromethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
Ethylbenzene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
Hexachlorobutadiene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
Isopropylbenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	20 *U*	5.0 *U*	10 *U*	200 *U*
meta & para Xylenes	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
Methylene chloride	8260B	µg/L	2.7	50 *U*	20 *U*	75 *J*	5.0 *U*	10 *U*	200 *U*
Naphthalene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	59 *J*	5.0 *U*	10 *U*	200 *U*
n-Butylbenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
n-Propylbenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
ortho-Xylene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
sec-Butylbenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
Styrene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
tert-Butylbenzene	8260B	µg/L	2.0 *U*	50 *U*	20 *U*	2.0 *U*	5.0 *U*	10 *U*	200 *U*
Tetrachloroethene	8260B	µg/L	1.4	13 *U*	5.5	23 *J*	6.5	6.7	50 *U*
Toluene	8260B	µg/L	7.0	19 *U*	5.0 *U*	380 *J*	2.0 *U*	2.5 *U*	50 *U*
trans-1,2-Dichloroethene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
trans-1,3-Dichloropropene	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	5.0 *U*	1.3 *U*	2.5 *U*	50 *U*
Trichloroethene	8260B	µg/L	0.50 *U*	55	5.0 *U*	16 *J*	5.1	5.5	50 *U*
Trichlorofluoromethane	8260B	µg/L	0.50 *U*	13 *U*	5.0 *U*	0.50 *U*	1.3 *U*	2.5 *U*	50 *U*
Vinyl chloride	8260B	µg/L	0.50 *U*	23	5.0 *U*	5.8 *J*	1.3 *U*	2.5 *U*	50 *U*

Table 5. (cont.)

			WB-11	WB-12	WB-13	WB-13	WB-14	WB-14	WB-15
			3/7/2003	2/20/2003	2/26/2003	2/26/2003	2/27/2003	2/27/2003	2/17/2003
			GW03070301	GW02200301	GW02260303	GW02260304	GW02270301	GW02270302	GW02170301
	Depth below mudline (ft)		19.5 to 22.0	5.0 to 9.0	5.0 to 9.0	16.5 to 20.5	4.0 to 8.0	17.0 to 21.0	1.3 to 5.3
	Elevation (ft CPD)		-21.6 to -24.1	-37.9 to -41.9	-4.2 to -8.2	-15.7 to -19.7	-10.5 to -14.5	-23.5 to -27.5	-36.8 to -40.8
Chemical	Method	Units							
1,1,1,2-Tetrachloroethane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,1,1-Trichloroethane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,1,2,2-Tetrachloroethane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,1,2-Trichloroethane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,1-Dichloroethane	8260B	µg/L	50 *U*	1.5	0.98	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,1-Dichloroethene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,1-Dichloropropene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,2,3-Trichlorobenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
1,2,3-Trichloropropane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,2,4-Trichlorobenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
1,2,4-Trimethylbenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
1,2-Dibromo-3-chloropropane	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
1,2-Dibromoethane	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
1,2-Dichlorobenzene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,2-Dichloroethane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,2-Dichloropropane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,3,5-Trimethylbenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
1,3-Dichlorobenzene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,3-Dichloropropane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
1,4-Dichlorobenzene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
2,2-Dichloropropane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
2-Butanone	8260B	µg/L	2,000 *UR*	20 *UR*	20 *UR*	1,000 *UR*	20 *UR*	500 *UR*	20 *UR*
2-Chlorotoluene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
2-Hexanone	8260B	µg/L	2,000 *U*	20 *UR*	20 *UR*	1,000 *UR*	20 *UR*	500 *UR*	20 *U*
4-Chlorotoluene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
4-Isopropyltoluene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
4-Methyl-2-pentanone	8260B	µg/L	2,000 *UR*	20 *UR*	20 *UR*	1,000 *UR*	20 *UR*	500 *UR*	20 *UR*
Acetone	8260B	µg/L	2,000 *UR*	20 *UR*	20 *UR*	1,000 *UR*	20 *UR*	500 *UR*	20 *UR*
Benzene	8260B	µg/L	50 *U*	0.92	1.6	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Bromobenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
Bromochloromethane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Bromodichloromethane	8260B	µg/L	50 *U*	6.7	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Bromoform	8260B	µg/L	50 *U*	9.9	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Bromomethane	8260B	µg/L	50 *UJ*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*

Table 5. (cont.)

			WB-11	WB-12	WB-13	WB-13	WB-14	WB-14	WB-15
			3/7/2003	2/20/2003	2/26/2003	2/26/2003	2/27/2003	2/27/2003	2/17/2003
			GW03070301	GW02200301	GW02260303	GW02260304	GW02270301	GW02270302	GW02170301
	Depth below mudline (ft)		19.5 to 22.0	5.0 to 9.0	5.0 to 9.0	16.5 to 20.5	4.0 to 8.0	17.0 to 21.0	1.3 to 5.3
	Elevation (ft CPD)		-21.6 to -24.1	-37.9 to -41.9	-4.2 to -8.2	-15.7 to -19.7	-10.5 to -14.5	-23.5 to -27.5	-36.8 to -40.8
Chemical	Method	Units							
Carbon disulfide	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Carbon tetrachloride	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Chlorobenzene	8260B	µg/L	23,000	11	23	12,000	4.2	9,300	210
Chloroethane	8260B	µg/L	50 *U*	0.95	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *UR*
Chloroform	8260B	µg/L	85 *U*	430	0.50 *U*	25 *U*	0.50 *U*	13 *U*	2.2
Chloromethane	8260B	µg/L	50 *U*	1.5	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *UJ*
cis-1,2-Dichloroethene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
cis-1,3-Dichloropropene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Dibromochloromethane	8260B	µg/L	50 *U*	3.3	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Dibromomethane	8260B	µg/L	50 *U*	1.4	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Dichlorodifluoromethane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *UJ*
Ethylbenzene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Hexachlorobutadiene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
Isopropylbenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
meta & para Xylenes	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Methylene chloride	8260B	µg/L	200 *U*	2.6	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
Naphthalene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
n-Butylbenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
n-Propylbenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
ortho-Xylene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
sec-Butylbenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
Styrene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
tert-Butylbenzene	8260B	µg/L	200 *U*	2.0 *U*	2.0 *U*	100 *U*	2.0 *U*	50 *U*	2.0 *U*
Tetrachloroethene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	400	0.86	250	0.50 *U*
Toluene	8260B	µg/L	50 *U*	1.0	1.1	25 *U*	1.7	13 *U*	1.7
trans-1,2-Dichloroethene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
trans-1,3-Dichloropropene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Trichloroethene	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25	0.50 *U*	190	0.50 *U*
Trichlorofluoromethane	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*
Vinyl chloride	8260B	µg/L	50 *U*	0.50 *U*	0.50 *U*	25 *U*	0.50 *U*	13 *U*	0.50 *U*

Table 5. (cont.)

			WB-16	WB-18	WB-18	WB-19	WB-20	WB-21
			2/19/2003	2/25/2003	2/26/2003	2/25/2003	2/24/2003	2/20/2003
			GW02190301	GW02250302	GW02260301	GW02250301	GW02240301	GW02200302
	Depth below mudline (ft)		3.4 to 4.4	5.0 to 9.0	17.5 to 21.5	2.9 to 3.9	2.5 to 4.5	4.3 to 8.3
	Elevation (ft CPD)		-30.5 to -31.5	-3.5 to -7.5	-16.0 to -20.0	-27.1 to -28.1	-39.4 to -41.4	-39.2 to -43.2
Chemical	Method	Units						
1,1,1,2-Tetrachloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,1-Trichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,2,2-Tetrachloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1,2-Trichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,1-Dichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	2.1	0.50 *U*	0.50 *U*	0.50 *U*
1,1-Dichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	0.85	0.50 *U*	0.50 *U*	0.50 *U*
1,1-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,2,3-Trichlorobenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2,3-Trichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,2,4-Trichlorobenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2,4-Trimethylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2-Dibromo-3-chloropropane	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2-Dibromoethane	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,2-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,2-Dichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,2-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,3,5-Trimethylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
1,3-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,3-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
1,4-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2,2-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
2-Butanone	8260B	µg/L	20 *UR*	20 *UR*	20 *UR*	20 *UR*	20 *UR*	20 *UR*
2-Chlorotoluene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
2-Hexanone	8260B	µg/L	20 *U*	20 *UR*	20 *UR*	20 *UR*	20 *UR*	20 *UR*
4-Chlorotoluene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
4-Isopropyltoluene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
4-Methyl-2-pentanone	8260B	µg/L	20 *UR*	20 *UR*	20 *UR*	20 *UR*	20 *UR*	20 *UR*
Acetone	8260B	µg/L	20 *UR*	20 *UR*	20 *UR*	20 *UR*	20 *UR*	20 *UR*
Benzene	8260B	µg/L	0.50 *U*	0.72	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromobenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Bromochloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromodichloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromoform	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Bromomethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*

Table 5. (cont.)

			WB-16	WB-18	WB-18	WB-19	WB-20	WB-21
			2/19/2003	2/25/2003	2/26/2003	2/25/2003	2/24/2003	2/20/2003
			GW02190301	GW02250302	GW02260301	GW02250301	GW02240301	GW02200302
	Depth below mudline (ft)		3.4 to 4.4	5.0 to 9.0	17.5 to 21.5	2.9 to 3.9	2.5 to 4.5	4.3 to 8.3
	Elevation (ft CPD)		-30.5 to -31.5	-3.5 to -7.5	-16.0 to -20.0	-27.1 to -28.1	-39.4 to -41.4	-39.2 to -43.2
Chemical	Method	Units						
Carbon disulfide	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Carbon tetrachloride	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Chlorobenzene	8260B	µg/L	20	2.3	0.50 *U*	0.50 *U*	79	220
Chloroethane	8260B	µg/L	0.50 *UR*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Chloroform	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Chloromethane	8260B	µg/L	0.50 *UJ*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
cis-1,2-Dichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	1.4	0.50 *U*	0.50 *U*	0.50 *U*
cis-1,3-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dibromochloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dibromomethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Dichlorodifluoromethane	8260B	µg/L	0.50 *UJ*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Ethylbenzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Hexachlorobutadiene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Isopropylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
meta & para Xylenes	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Methylene chloride	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Naphthalene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
n-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
n-Propylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
ortho-Xylene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
sec-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Styrene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
tert-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*	2.0 *U*
Tetrachloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Toluene	8260B	µg/L	6.4	31 *U*	7.1 *U*	6.4 *U*	1.5 *U*	2.1
trans-1,2-Dichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
trans-1,3-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*
Trichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	1.2	0.50 *U*	0.50 *U*	0.50 *U*
Trichlorofluoromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.59	0.50 *U*	0.50 *U*	0.50 *U*
Vinyl chloride	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*

Table 5. (cont.)

			WB-21 (dup)	WB-22	WB-23	WB-23	WB-25	WB-25
			2/20/2003	2/21/2003	2/18/2003	2/18/2003	3/10/2003	3/10/2003
			GW02200303	GW02210301	GW02180301	GW02180302	GW03100301	GW03100302
		Depth below mudline (ft)	4.3 to 8.3	3.5 to 7.5	3.6 to 7.6	16.6 to 20.6	11.7 to 15.7	19.7 to 21.7
		Elevation (ft CPD)	-39.2 to -43.2	-42.4 to -46.4	-14.8 to -18.8	-27.8 to -31.8	-16.1 to -20.1	-24.1 to -26.1
Chemical	Method	Units						
1,1,1,2-Tetrachloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,1,1-Trichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,1,2,2-Tetrachloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,1,2-Trichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,1-Dichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	2.2	25 *U*	25 *U*
1,1-Dichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,1-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,2,3-Trichlorobenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
1,2,3-Trichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,2,4-Trichlorobenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
1,2,4-Trimethylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
1,2-Dibromo-3-chloropropane	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
1,2-Dibromoethane	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
1,2-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,2-Dichloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,2-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,3,5-Trimethylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
1,3-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,3-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
1,4-Dichlorobenzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
2,2-Dichloropropane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
2-Butanone	8260B	µg/L	20 *UR*	20 *UR*	20 *UR*	40 *UR*	1,000 *UR*	1,000 *UR*
2-Chlorotoluene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
2-Hexanone	8260B	µg/L	20 *UR*	20 *UR*	20 *U*	40 *U*	1,000 *U*	1,000 *U*
4-Chlorotoluene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
4-Isopropyltoluene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
4-Methyl-2-pentanone	8260B	µg/L	20 *UR*	20 *UR*	20 *UR*	40 *UR*	1,000 *UR*	1,000 *UR*
Acetone	8260B	µg/L	20 *UR*	20 *UR*	20 *UR*	40 *UR*	1,000 *UR*	1,000 *UR*
Benzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Bromobenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
Bromochloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Bromodichloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	5.5	25 *U*	25 *U*
Bromoform	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	5.1	25 *U*	25 *U*
Bromomethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *UJ*	25 *UJ*

Table 5. (cont.)

			WB-21 (dup)	WB-22	WB-23	WB-23	WB-25	WB-25
			2/20/2003	2/21/2003	2/18/2003	2/18/2003	3/10/2003	3/10/2003
			GW02200303	GW02210301	GW02180301	GW02180302	GW03100301	GW03100302
	Depth below mudline (ft)		4.3 to 8.3	3.5 to 7.5	3.6 to 7.6	16.6 to 20.6	11.7 to 15.7	19.7 to 21.7
	Elevation (ft CPD)		-39.2 to -43.2	-42.4 to -46.4	-14.8 to -18.8	-27.8 to -31.8	-16.1 to -20.1	-24.1 to -26.1
Chemical	Method	Units						
Carbon disulfide	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Carbon tetrachloride	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Chlorobenzene	8260B	µg/L	190	100 *J*	0.50 *U*	2.9	16,000	16,000
Chloroethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *UR*	1.0 *UR*	25 *U*	25 *U*
Chloroform	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	610	25 *U*	25 *U*
Chloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *UJ*	1.0 *UJ*	25 *U*	25 *U*
cis-1,2-Dichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	57	25 *U*
cis-1,3-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Dibromochloromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	3.2	25 *U*	25 *U*
Dibromomethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.4	25 *U*	25 *U*
Dichlorodifluoromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *UJ*	1.0 *U*	25 *U*	25 *U*
Ethylbenzene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Hexachlorobutadiene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
Isopropylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
meta & para Xylenes	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Methylene chloride	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
Naphthalene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
n-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
n-Propylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
ortho-Xylene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
sec-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
Styrene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
tert-Butylbenzene	8260B	µg/L	2.0 *U*	2.0 *U*	2.0 *U*	4.0 *U*	100 *U*	100 *U*
Tetrachloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Toluene	8260B	µg/L	2.2	4.7	3.2	2.5	25 *U*	25 *U*
trans-1,2-Dichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
trans-1,3-Dichloropropene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Trichloroethene	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	45	25 *U*
Trichlorofluoromethane	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*
Vinyl chloride	8260B	µg/L	0.50 *U*	0.50 *U*	0.50 *U*	1.0 *U*	25 *U*	25 *U*

Note: *J* - estimated
R - rejected
U - undetected at detection limit shown
CPD - City of Portland Datum

Table 6. Pesticide results for groundwater samples from the Stage 1 and 2 boreholes

			WB-1	WB-1	WB-2	WB-2	WB-3	WB-3	WB-3 (dup)	WB-4
			6/4/2002	6/4/2002	6/4/2002	6/4/2002	6/5/2002	6/6/2002	6/6/2002	6/10/2002
			GW06040201	GW06040202	GW06040203	GW06040204	GW06050201	GW06060201	GW06060202	GW06100201
	Depth below mudline (ft)		4.0 to 8.0	19.0 to 23.0	3.7 to 7.7	11.7 to 15.7	3.0 to 7.0	11.0 to 15.0	11.0 to 15.0	4.3 to 8.3
	Elevation (ft CPD)		3.6 to -0.4	-11.4 to -15.4	-0.3 to -4.3	-8.3 to -12.3	-5.3 to -9.3	-13.3 to -17.3	-13.3 to -17.3	2.3 to -1.7
Chemical	Method	Units								
4,4'-DDD	8081A	µg/L	15 *J*	1.6 *J*	6.0 *J*	0.78 *J*	1.0 *J*	0.86 *J*	1.6 *J*	5.3 *J*
4,4'-DDE	8081A	µg/L	0.41 *J*	0.018 *J*	0.25 *J*	0.016 *J*	0.10	0.031 *J*	0.056 *J*	0.11 *J*
4,4'-DDT	8081A	µg/L	34 *J*	0.44	29 *J*	0.14	0.17	0.24	0.27	6.5 *J*
Aldrin	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.017 *UR*
alpha-Chlordane	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
alpha-Endosulfan	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.054 *UR*
alpha-Hexachlorocyclohexane	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.37 *UR*
beta-Endosulfan	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.088 *UR*
beta-Hexachlorocyclohexane	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
delta-Hexachlorocyclohexane	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.015 *UR*
Dieldrin	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
Endosulfan sulfate	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
Endrin	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
Endrin aldehyde	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
Endrin ketone	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
gamma-Chlordane	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.099 *UR*
gamma-Hexachlorocyclohexane	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
Heptachlor	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *UR*
Heptachlor epoxide	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
Methoxychlor	8081A	µg/L	0.020 *UJ*	0.020 *U*	0.020 *UJ*	0.020 *U*	0.020 *U*	0.020 *U*	0.020 *U*	0.0096 *UR*
Toxaphene	8081A	µg/L	0.50 *UJ*	0.50 *U*	0.50 *UJ*	0.50 *U*	0.50 *U*	0.50 *U*	0.50 *U*	0.48 *UR*

Table 6. (cont.)

			WB-4	WB-4	WB-5	WB-5	WB-7	WB-8	WB-8	WB-9
			6/10/2002	6/10/2002	6/11/2002	6/11/2002	6/12/2002	2/28/2003	2/28/2003	3/4/2003
			GW06100202	GW06100203	GW06110202	GW06110203	GW06120202	GW02280301	GW02280302	GW03040301
	Depth below mudline (ft)		17.3 to 21.3	30.3 to 34.3	5.3 to 9.3	15.3 to 19.3	10.8 to 14.8	10.3 to 14.3	33.8 to 37.8	15.0 to 19.0
	Elevation (ft CPD)		-10.7 to -14.7	-23.7 to -27.7	-17.5 to -21.5	-27.5 to -31.5	-23.9 to -27.9	-7.4 to -11.4	-30.9 to -34.9	-9.9 to -13.9
Chemical	Method	Units								
4,4'-DDD	8081A	µg/L	0.38 *J*	0.83 *J*	22 *J*	5 *J*	78 *J*	14	12	72 *J*
4,4'-DDE	8081A	µg/L	0.020 *J*	0.042 *J*	0.55 *J*	0.22 *J*	0.40 *J*	0.097 *U*	0.44 *J*	1.2 *J*
4,4'-DDT	8081A	µg/L	0.69 *J*	2.0 *J*	26 *J*	65 *J*	66 *J*	10	17	68 *U*
Aldrin	8081A	µg/L	0.0098 *UR*	0.027 *UR*	0.0098 *UJ*	0.0098 *UJ*	0.0098 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
alpha-Chlordane	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.011 *UJ*	0.011 *UJ*	0.011 *UJ*	0.097 *U*	0.096 *U*	1.4
alpha-Endosulfan	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.0066 *UJ*	0.0066 *UJ*	0.0066 *UJ*	0.097 *U*	0.096 *U*	0.23 *U*
alpha-Hexachlorocyclohexane	8081A	µg/L	0.017 *UR*	0.055 *UR*	0.0051 *UJ*	0.0051 *UJ*	0.0051 *UJ*	0.097 *U*	0.50 *U*	0.53 *U*
beta-Endosulfan	8081A	µg/L	0.012 *UR*	0.020 *UR*	0.0072 *UJ*	0.0072 *UJ*	0.0072 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
beta-Hexachlorocyclohexane	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.017 *UJ*	0.017 *UJ*	0.017 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
delta-Hexachlorocyclohexane	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.0020 *UJ*	0.0020 *UJ*	0.0020 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
Dieldrin	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.0048 *UJ*	0.0048 *UJ*	0.0048 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
Endosulfan sulfate	8081A	µg/L	0.0098 *UR*	0.013 *UR*	0.0051 *UJ*	0.0051 *UJ*	0.0051 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
Endrin	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.0089 *UJ*	0.0089 *UJ*	0.0089 *UJ*	0.34 *U*	0.096 *U*	0.098 *U*
Endrin aldehyde	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.0047 *UJ*	0.0047 *UJ*	0.0047 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
Endrin ketone	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.0020 *UJ*	0.0020 *UJ*	0.0020 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
gamma-Chlordane	8081A	µg/L	0.0098 *UR*	0.013 *UR*	0.0053 *UJ*	0.0053 *UJ*	0.0053 *UJ*	0.097 *U*	0.096 *U*	0.14 *U*
gamma-Hexachlorocyclohexane	8081A	µg/L	0.12 *UR*	0.037 *UR*	0.0034 *UJ*	0.0034 *UJ*	0.0034 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
Heptachlor	8081A	µg/L	0.014 *UR*	0.026 *UR*	0.0020 *UJ*	0.0020 *UJ*	0.0020 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
Heptachlor epoxide	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.0031 *UJ*	0.0031 *UJ*	0.0031 *UJ*	0.097 *U*	0.096 *U*	0.098 *U*
Methoxychlor	8081A	µg/L	0.0098 *UR*	0.012 *UR*	0.0043 *UR*	0.0043 *UR*	0.0043 *UR*	0.097 *U*	0.096 *U*	0.098 *U*
Toxaphene	8081A	µg/L	0.49 *UR*	0.58 *UR*	0.50 *UJ*	0.50 *UJ*	0.50 *UJ*	4.9 *U*	9.2 *U*	4.9 *U*

Table 6. (cont.)

			WB-9	WB-10	WB-10	WB-10 (dup)	WB-11	WB-11	WB-12	WB-13
			3/4/2003	3/5/2003	3/6/2003	3/6/2003	3/7/2003	3/7/2003	2/20/2003	2/26/2003
			GW03040302	GW03050302	GW03060301	GW03060302	GW03070302	GW03070301	GW02200301	GW02260303
	Depth below mudline (ft)		31.0 to 35.0	14.0 to 18.0	24.0 to 28.0	24.0 to 28.0	11.5 to 15.5	19.5 to 22.0	5.0 to 9.0	5.0 to 9.0
	Elevation (ft CPD)		-25.9 to -29.9	-18.0 to -22.0	-28.0 to -32.0	-28.0 to -32.0	-13.6 to -17.6	-21.6 to -24.1	-37.9 to -41.9	-4.2 to -8.2
Chemical	Method	Units								
4,4'-DDD	8081A	µg/L	2.2	710	0.20 *U*	0.25 *U*	91	3.5	0.13	0.60
4,4'-DDE	8081A	µg/L	0.16	13	0.0098 *U*	0.0098 *U*	1.5 *J*	0.077 *J*	0.098 *U*	0.0097 *U*
4,4'-DDT	8081A	µg/L	17	1,900	0.21 *U*	0.33 *U*	130	1.1 *J*	0.26	0.49 *J*
Aldrin	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.11 *J*	0.098 *U*	0.0097 *U*
alpha-Chlordane	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.0098 *U*	0.098 *U*	0.0097 *U*
alpha-Endosulfan	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.0098 *U*	0.098 *U*	0.0097 *U*
alpha-Hexachlorocyclohexane	8081A	µg/L	0.85 *U*	1.2 *U*	0.028 *U*	0.018 *U*	0.011 *U*	5.9 *U*	0.098 *U*	0.052 *U*
beta-Endosulfan	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.015 *U*	0.19 *J*	0.0097 *U*
beta-Hexachlorocyclohexane	8081A	µg/L	0.18 *J*	0.98 *U*	0.012 *U*	0.0098 *U*	0.011 *U*	0.028 *U*	0.098 *U*	0.0097 *U*
delta-Hexachlorocyclohexane	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.019	0.098 *U*	0.0097 *U*
Dieldrin	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.0098 *U*	0.098 *U*	0.0097 *U*
Endosulfan sulfate	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.073 *U*	0.018 *U*	0.098 *U*	0.0097 *U*
Endrin	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.014 *U*	0.098 *U*	0.0097 *U*
Endrin aldehyde	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.0098 *U*	0.098 *U*	0.0097 *U*
Endrin ketone	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.0098 *U*	0.098 *U*	0.0097 *U*
gamma-Chlordane	8081A	µg/L	0.098 *U*	1.4 *U*	0.0098 *U*	0.0098 *U*	0.097 *U*	0.014 *U*	0.098 *U*	0.0097 *U*
gamma-Hexachlorocyclohexane	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.038 *J*	0.024	0.098 *U*	0.0097 *U*
Heptachlor	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.011 *U*	0.0098 *U*	0.098 *U*	0.0097 *U*
Heptachlor epoxide	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.019 *U*	0.0098 *U*	0.098 *U*	0.0097 *U*
Methoxychlor	8081A	µg/L	0.098 *U*	0.98 *U*	0.0098 *U*	0.0098 *U*	0.012 *U*	0.0098 *U*	0.098 *U*	0.0097 *U*
Toxaphene	8081A	µg/L	4.9 *U*	250 *U*	0.49 *U*	0.49 *U*	5.6 *U*	2.2 *U*	4.9 *U*	0.49 *U*

Table 6. (cont.)

			WB-13	WB-14	WB-14	WB-15	WB-16	WB-18	WB-18	WB-19
			2/26/2003	2/27/2003	2/27/2003	2/17/2003	2/19/2003	2/25/2003	2/26/2003	2/25/2003
			GW02260304	GW02270301	GW02270302	GW02170301	GW02190301	GW02250302	GW02260301	GW02250301
	Depth below mudline (ft)		16.5 to 20.5	4.0 to 8.0	17.0 to 21.0	1.3 to 5.3	3.4 to 4.4	5.0 to 9.0	17.5 to 21.5	2.9 to 3.9
	Elevation (ft CPD)		-15.7 to -19.7	-10.5 to -14.5	-23.5 to -27.5	-36.8 to -40.8	-30.5 to -31.5	-3.5 to -7.5	-16.0 to -20.0	-27.1 to -28.1
Chemical	Method	Units								
4,4'-DDD	8081A	µg/L	0.12	20	0.097 *U*	2.0	0.033	0.16	0.30	0.0097 *U*
4,4'-DDE	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
4,4'-DDT	8081A	µg/L	0.18 *U*	23	0.097 *U*	1.3	0.030 *U*	0.51	0.13	0.0097 *U*
Aldrin	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
alpha-Chlordane	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
alpha-Endosulfan	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
alpha-Hexachlorocyclohexane	8081A	µg/L	14 *U*	0.28 *U*	3.3 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
beta-Endosulfan	8081A	µg/L	0.11 *U*	0.098 *U*	0.097 *U*	0.27 *U*	0.045 *U*	0.16	0.038 *J*	0.025 *U*
beta-Hexachlorocyclohexane	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.022 *U*	0.0097 *U*
delta-Hexachlorocyclohexane	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Dieldrin	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Endosulfan sulfate	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Endrin	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Endrin aldehyde	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Endrin ketone	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.019
gamma-Chlordane	8081A	µg/L	0.099 *U*	0.26 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
gamma-Hexachlorocyclohexane	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Heptachlor	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Heptachlor epoxide	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Methoxychlor	8081A	µg/L	0.099 *U*	0.098 *U*	0.097 *U*	0.098 *U*	0.0098 *U*	0.097 *U*	0.010 *U*	0.0097 *U*
Toxaphene	8081A	µg/L	5.0 *U*	20 *U*	4.9 *U*	26 *U*	0.49 *U*	4.9 *U*	0.52 *U*	0.49 *U*

Table 6. (cont.)

			WB-20	WB-21	WB-21 (dup)	WB-22	WB-23	WB-23	WB-25	WB-25
			2/24/2003	2/20/2003	2/20/2003	2/21/2003	2/18/2003	2/18/2003	3/10/2003	3/10/2003
			GW02240301	GW02200302	GW02200303	GW02210301	GW02180301	GW02180302	GW03100301	GW03100302
	Depth below mudline (ft)		2.5 to 4.5	4.3 to 8.3	4.3 to 8.3	3.5 to 7.5	3.6 to 7.6	16.6 to 20.6	11.7 to 15.7	19.7 to 21.7
	Elevation (ft CPD)		-39.4 to -41.4	-39.2 to -43.2	-39.2 to -43.2	-42.4 to -46.4	-14.8 to -18.8	-27.8 to -31.8	-16.1 to -20.1	-24.1 to -26.1
Chemical	Method	Units								
4,4'-DDD	8081A	µg/L	0.010 *U*	0.011	0.013	0.0098 *U*	0.13	0.098 *U*	0.42	4.5
4,4'-DDE	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.053 *J*	0.098 *U*	0.017	0.055 *U*
4,4'-DDT	8081A	µg/L	0.010 *U*	0.0098 *U*	0.011 *U*	0.0098 *U*	0.15	0.098 *U*	0.28 *J*	3.6
Aldrin	8081A	µg/L	0.010 *U*	0.010	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.034 *U*	0.036 *U*
alpha-Chlordane	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.018 *U*
alpha-Endosulfan	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.018 *U*
alpha-Hexachlorocyclohexane	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.012 *U*	0.0099 *U*
beta-Endosulfan	8081A	µg/L	0.022 *U*	0.013 *U*	0.013 *U*	0.016 *U*	0.067 *U*	0.098 *U*	0.074 *U*	0.12 *U*
beta-Hexachlorocyclohexane	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.013 *U*
delta-Hexachlorocyclohexane	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.019 *J*	0.0099 *U*
Dieldrin	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.0099 *U*
Endosulfan sulfate	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.017
Endrin	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.013 *U*
Endrin aldehyde	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.0099 *U*
Endrin ketone	8081A	µg/L	0.031	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.0099 *U*
gamma-Chlordane	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.025 *UJ*
gamma-Hexachlorocyclohexane	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.028	0.044 *J*
Heptachlor	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.0099 *U*
Heptachlor epoxide	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.0099 *U*
Methoxychlor	8081A	µg/L	0.010 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.0098 *U*	0.098 *U*	0.0099 *U*	0.030 *U*
Toxaphene	8081A	µg/L	0.51 *U*	0.49 *U*	0.49 *U*	0.49 *U*	1.3 *U*	4.9 *U*	0.75 *U*	3.9 *U*

Note: Samples were collected through a Geoprobe® screen and were unfiltered. This sampling methodology will introduce particulate matter into the aqueous sample; therefore, concentrations of detected pesticides are likely biased high.

J - estimated

R - rejected

U - undetected at detection limit shown

CPD - City of Portland Datum

Table 7. Perchlorate results for groundwater samples from the Stage 2 boreholes

Sample number	Survey station	Date	Depth Below Mudline (ft)	Elevation (ft CPD)	Perchlorate (µg/L)
GW02280301	WB-8	2/28/2003	10.3 to 14.3	-7.4 to -11.4	65 *J*
GW02280302	WB-8	2/28/2003	33.8 to 37.8	-30.9 to -34.9	3,800
GW03040301	WB-9	3/4/2003	15.0 to 19.0	-9.9 to -13.9	800 *U*
GW03040302	WB-9	3/4/2003	31.0 to 35.0	-25.9 to -29.9	400 *U*
GW03050302	WB-10	3/5/2003	14.0 to 18.0	-18.0 to -22.0	40,000 *U*
GW03060301	WB-10	3/6/2003	24.0 to 28.0	-28.0 to -32.0	1,000 *U*
GW03060302	WB-10 (dup)	3/6/2003	24.0 to 28.0	-28.0 to -32.0	1,000 *U*
GW03070302	WB-11	3/7/2003	11.5 to 15.5	-13.6 to -17.6	1,000 *U*
GW03070301	WB-11	3/7/2003	19.5 to 22.0	-21.6 to -24.1	1,000 *U*
GW02200301	WB-12	2/20/2003	5.0 to 9.0	-37.9 to -41.9	160,000 *J*
GW02260303	WB-13	2/26/2003	5.0 to 9.0	-4.2 to -8.2	20 *U*
GW02260304	WB-13	2/26/2003	16.5 to 20.5	-15.7 to -19.7	80 *U*
GW02270301	WB-14	2/27/2003	4.0 to 8.0	-10.5 to -14.5	4.0 *U*
GW02270302	WB-14	2/27/2003	17.0 to 21.0	-23.5 to -27.5	80 *U*
GW02170301	WB-15	2/17/2003	1.3 to 5.3	-36.8 to -40.8	40 *U*
GW02190301	WB-16	2/19/2003	3.4 to 4.4	-30.5 to -31.5	6.6
GW02250302	WB-18	2/25/2003	5.0 to 9.0	-3.5 to -7.5	81 *J*
GW02260301	WB-18	2/26/2003	17.5 to 21.5	-16.0 to -20.0	8.0 *U*
GW02250301	WB-19	2/25/2003	2.9 to 3.9	-27.1 to -28.1	4.0 *U*
GW02240301	WB-20	2/24/2003	2.5 to 4.5	-39.4 to -41.4	210 *J*
GW02200302	WB-21	2/20/2003	4.3 to 8.3	-39.2 to -43.2	200 *U*
GW02200303	WB-21 (dup)	2/20/2003	4.3 to 8.3	-39.2 to -43.2	200 *UJ*
GW02210301	WB-22	2/21/2003	3.5 to 7.5	-42.4 to -46.4	20 *U*
GW02180301	WB-23	2/18/2003	3.6 to 7.6	-14.8 to -18.8	11 *J*
GW02180302	WB-23	2/18/2003	16.6 to 20.6	-27.8 to -31.8	370,000
GW03100301	WB-25	3/10/2003	11.7 to 15.7	-16.1 to -20.1	1,000 *U*
GW03100302	WB-25	3/10/2003	19.7 to 21.7	-24.1 to -26.1	1,000 *U*

Note: *J* - estimated
U - undetected at detection limit shown
µg/L - micrograms per liter
CPD - City of Portland Datum

Figures

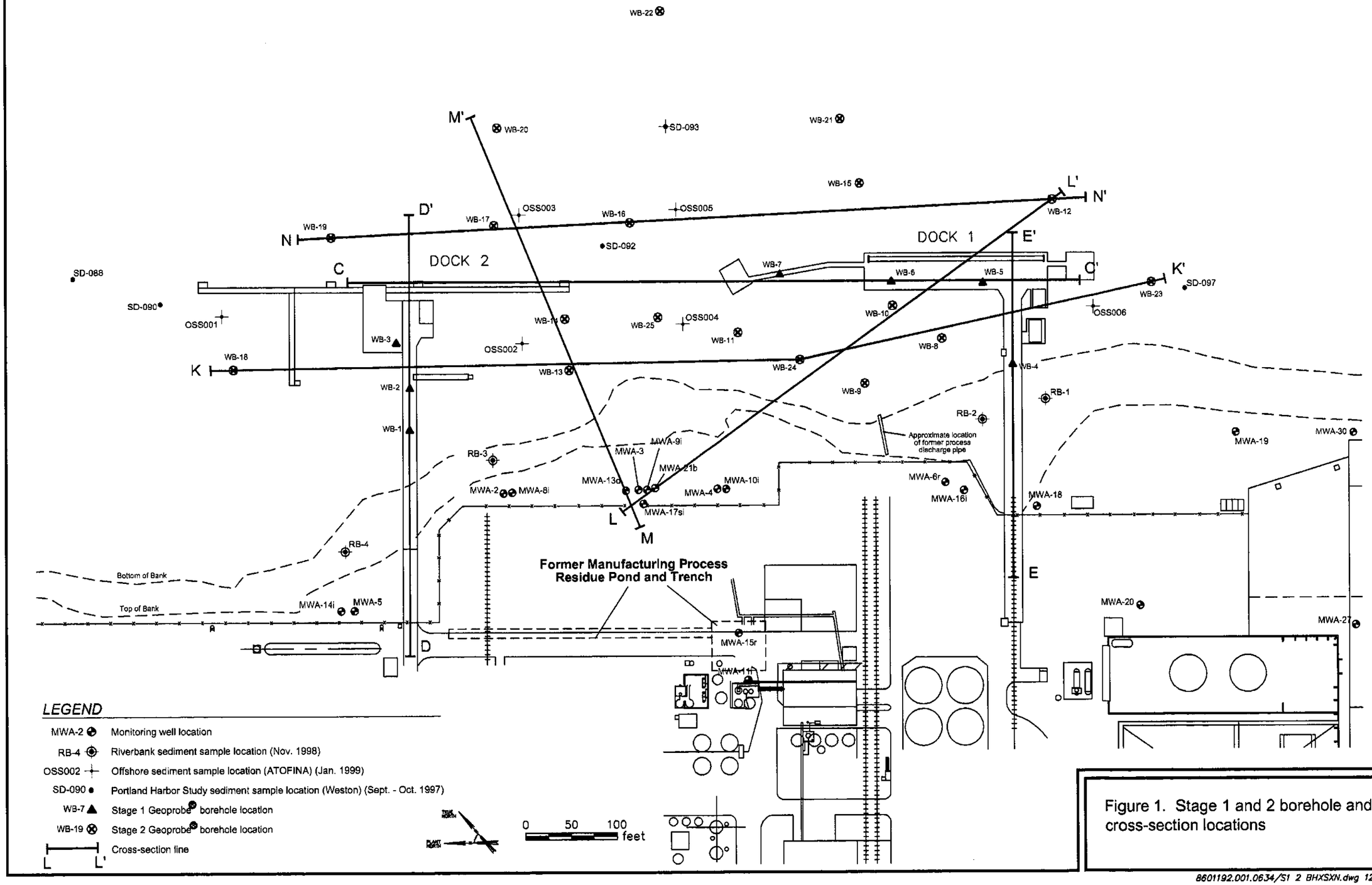


Figure 1. Stage 1 and 2 borehole and cross-section locations

8601192.001.0634/S1 2 BHXSXN.dwg 12/05/03 OR

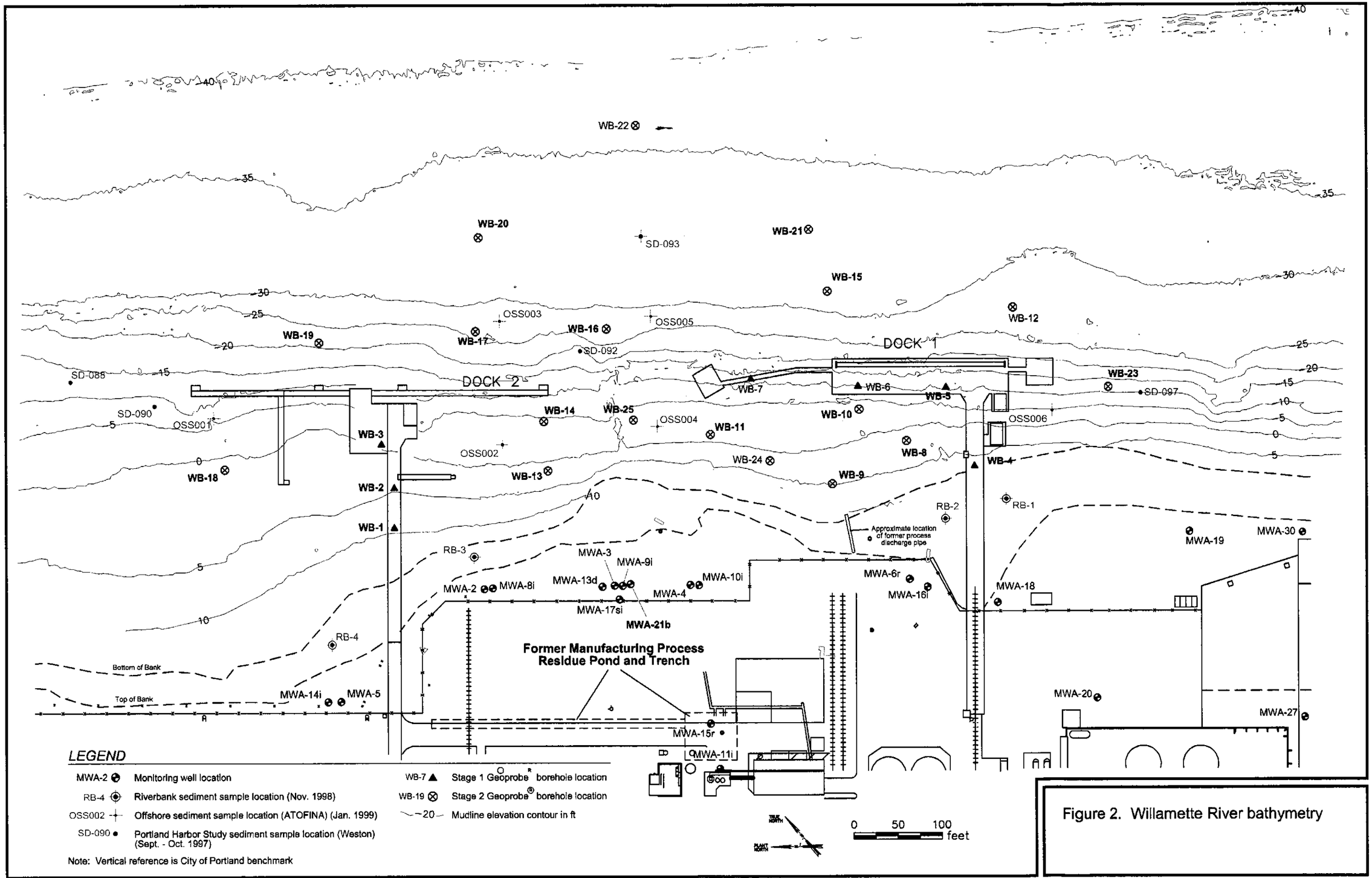


Figure 2. Willamette River bathymetry

8601192.001.0634/BATHYMETRIC.dwg 12/05/03 OR

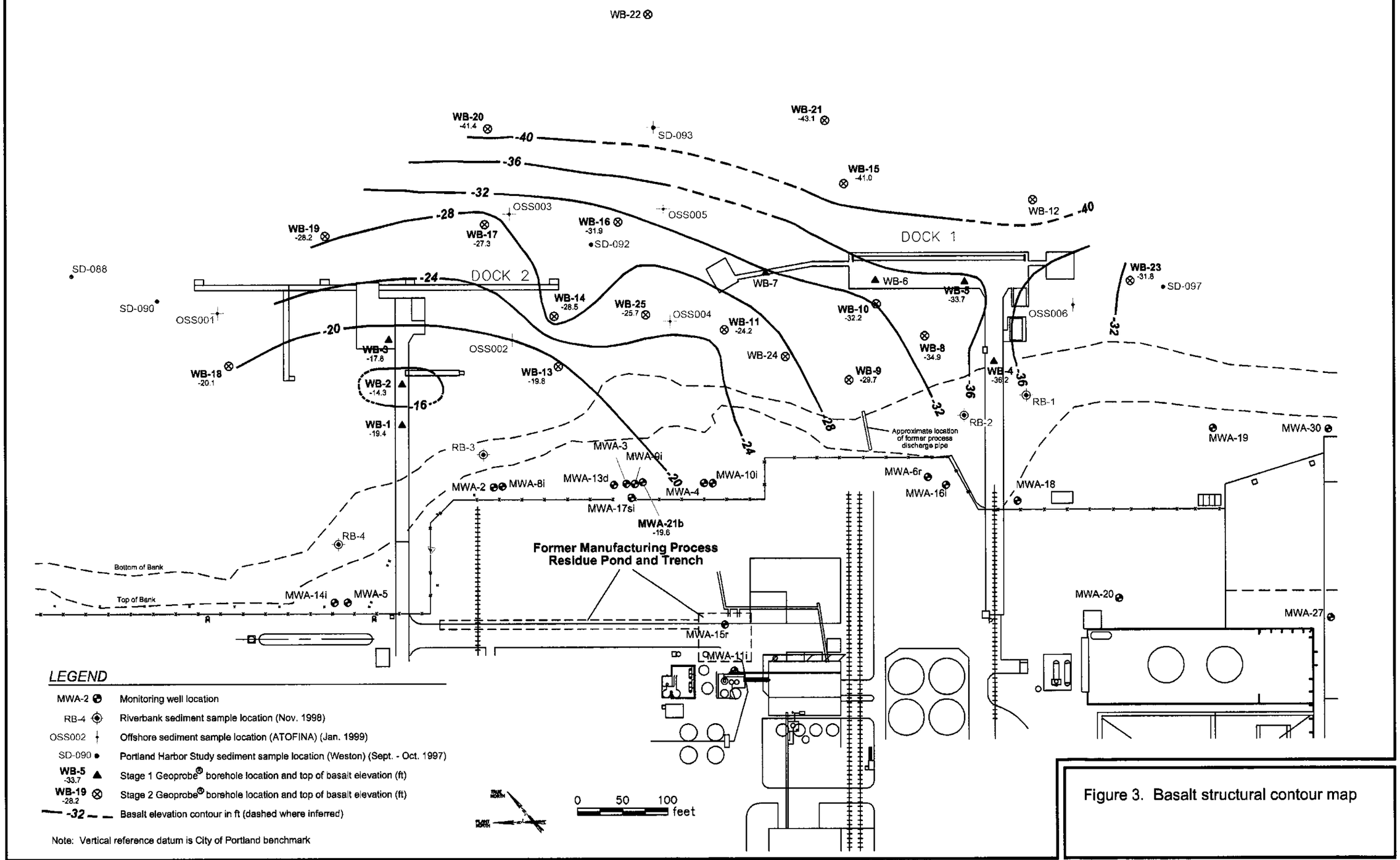
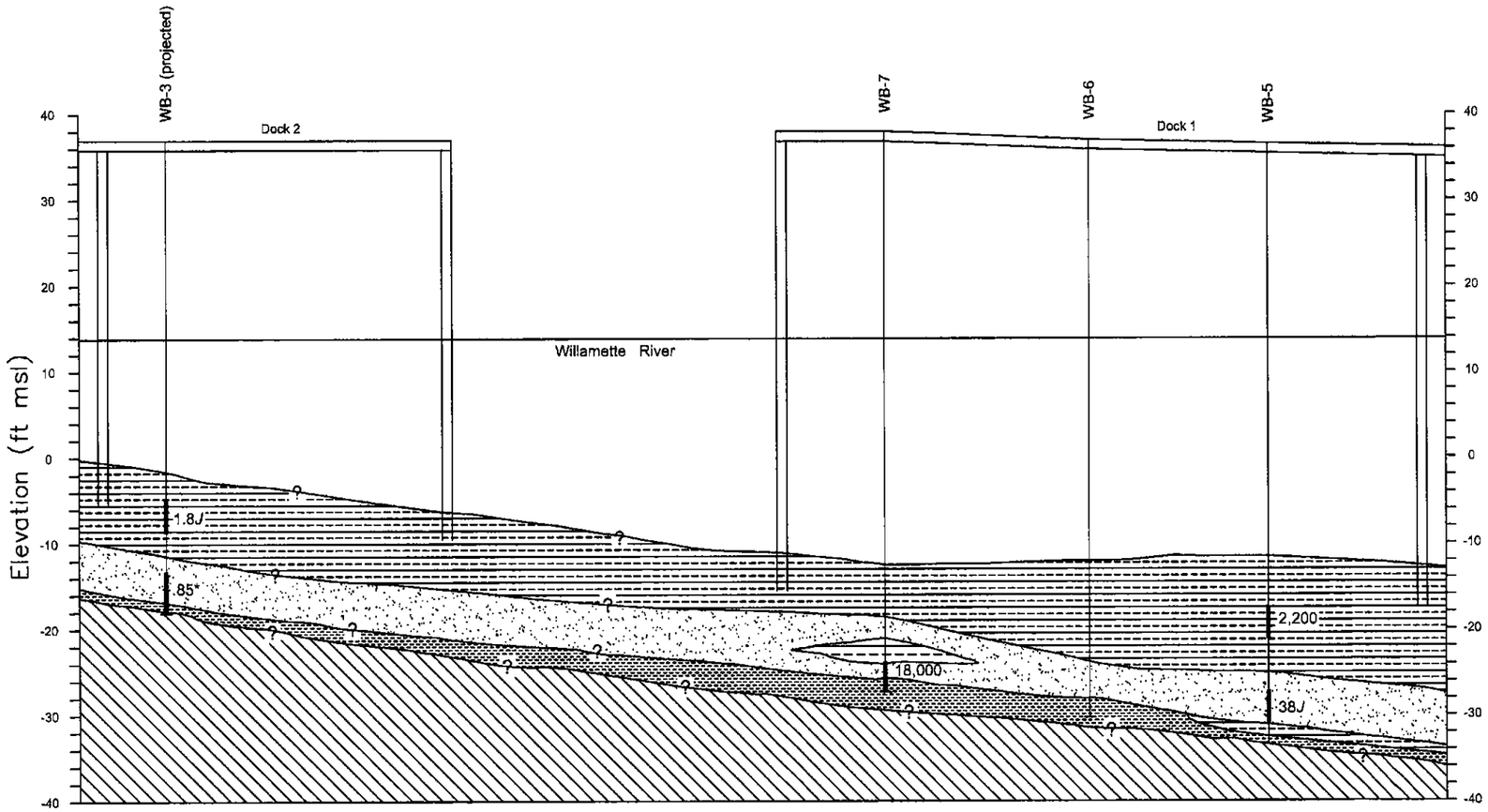


Figure 3. Basalt structural contour map

8601192.001.0634/BASALT.dwg 12/08/03 OR

C (Plant north)

C' (Plant south)



LEGEND

- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- WB-3 — Geoprobe® boring number
- Boring with grab groundwater sample interval
- Inferred soil or geologic contact (queried where uncertain)
- J - Estimated
- * - Average of sample and sample duplicate

0 80 feet

Note: Vertical scale exaggerated 5x

Note: All concentrations are in micrograms per liter (µg/L).
Chlorobenzene concentrations are from grab groundwater samples collected in June 2002.

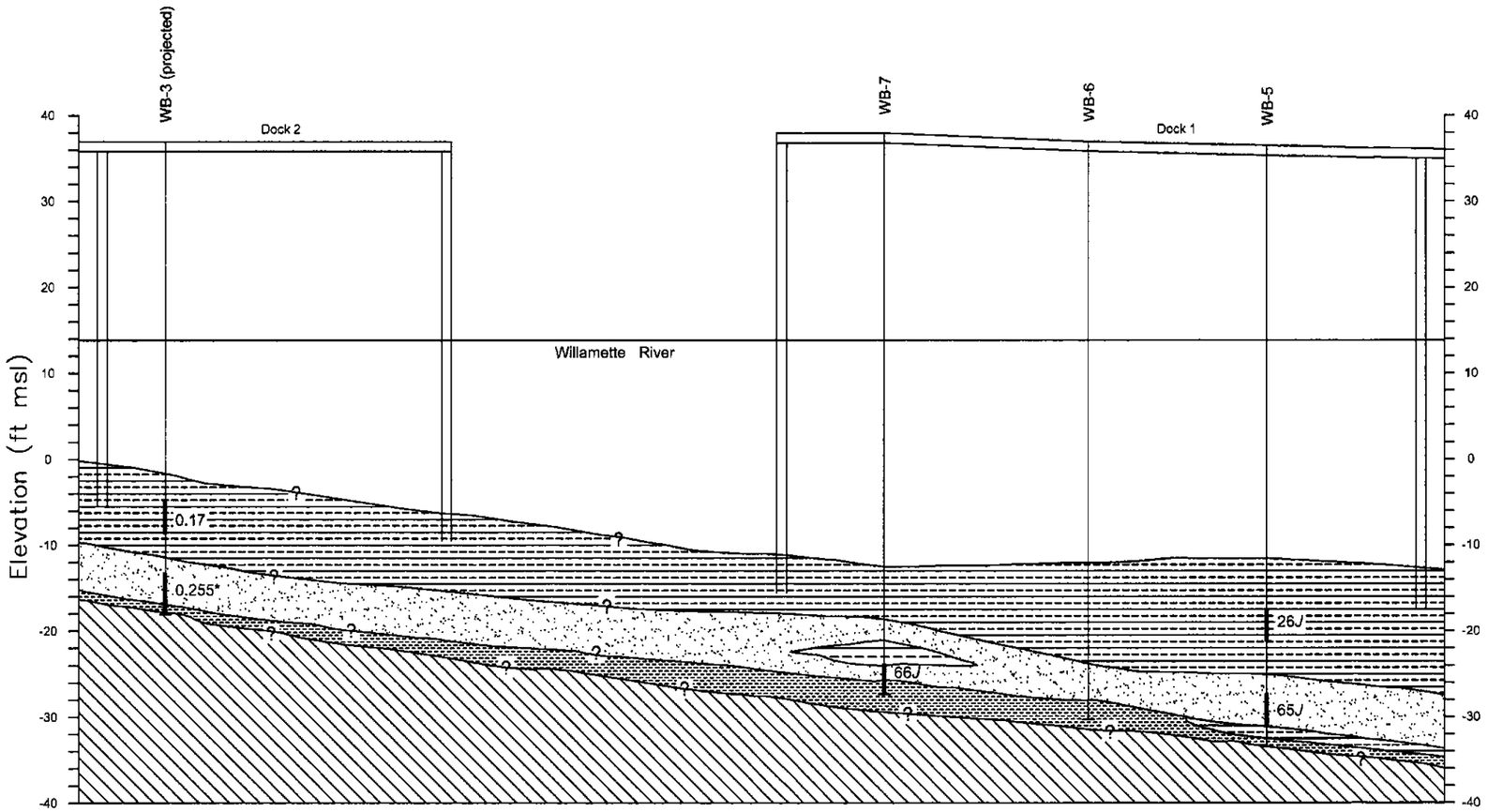
Exponent

Figure 4a. Cross-section C-C' with chlorobenzene concentrations in groundwater

8601192.001.0634\C-C' Chlor.dwg 11/18/03 OR

C (Plant north)

C' (Plant south)



LEGEND

- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt

WB-3 — Geoprobe® boring number

Boring with grab groundwater sample interval

Inferred soil or geologic contact (queried where uncertain)

J - Estimated

* - Average of sample and sample duplicate

0 80 feet

Note: Vertical scale exaggerated 5x

Note: All concentrations are in micrograms per liter (μg/L)
DDT concentrations are from grab groundwater samples collected in June 2002.
Samples were collected through a Geoprobe® screen and were unfiltered. This sampling methodology will introduce particulate matter into the aqueous sample; therefore, concentrations of detected pesticides are likely biased high.

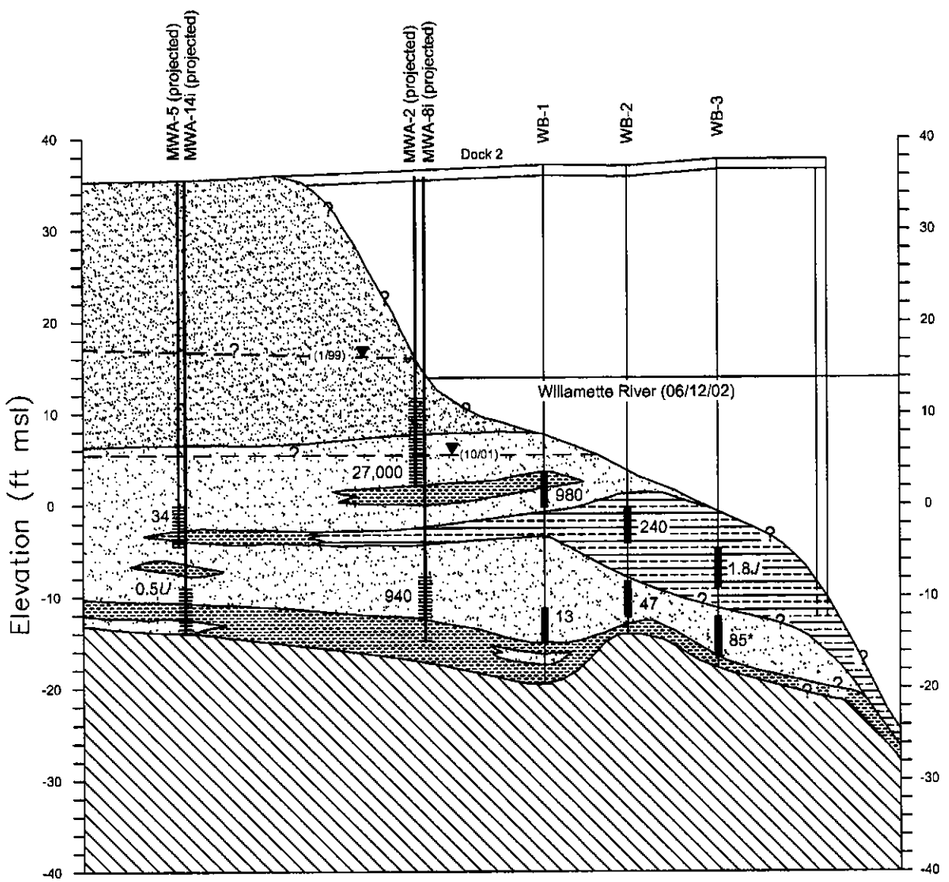
Exponent

Figure 4b. Cross-section C-C' with DDT concentrations in groundwater

8601192.001.0634\C-C' DDT.dwg 12/05/03 OR

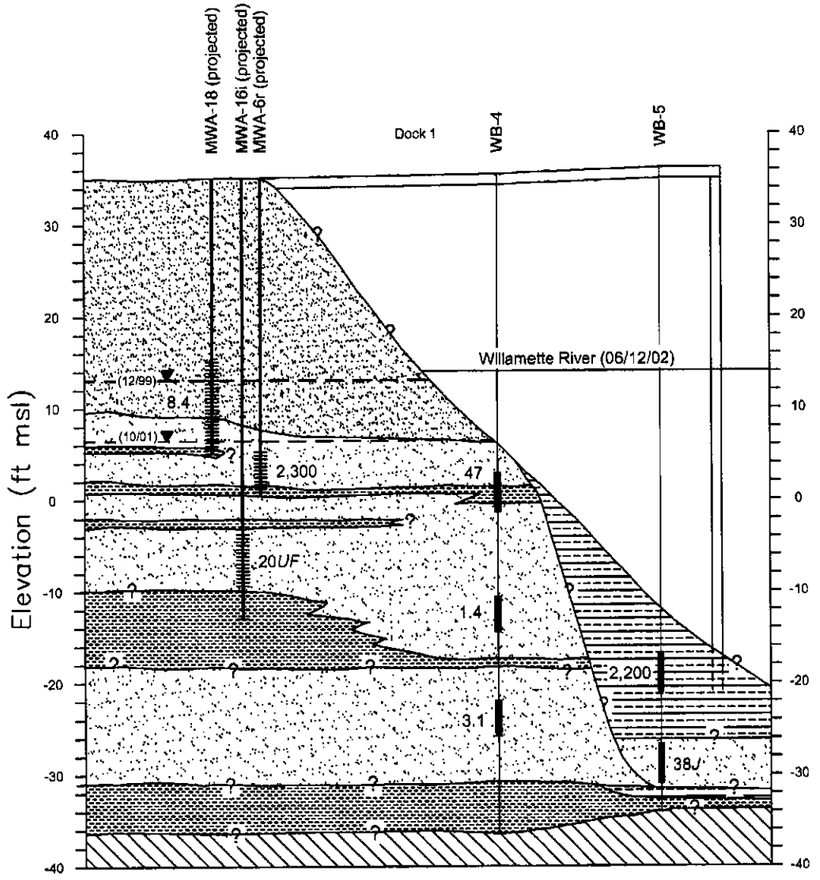
D (Plant west)

D' (Plant east)



E (Plant west)

E' (Plant east)



LEGEND

- Fill with debris
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt

WB-3 — Geoprobe® boring number

MWA-1 — Well number

Cased interval

Screen interval

Boring with grab groundwater sample interval

Shallow zone groundwater surface (approximate)

Inferred soil or geologic contact (queried where uncertain)

F - Field quality control sample (blanks or reference materials) criteria not met
J - Estimated
U - Undetected at detection limit shown
* - Average of sample and sample duplicate

0 80 feet

Note: Vertical scale exaggerated 5x

Note: All concentrations are in micrograms per liter (μg/L).
Chlorobenzene concentration data in monitoring wells are from April 2002; Geoprobe® boring data are from June 2002.

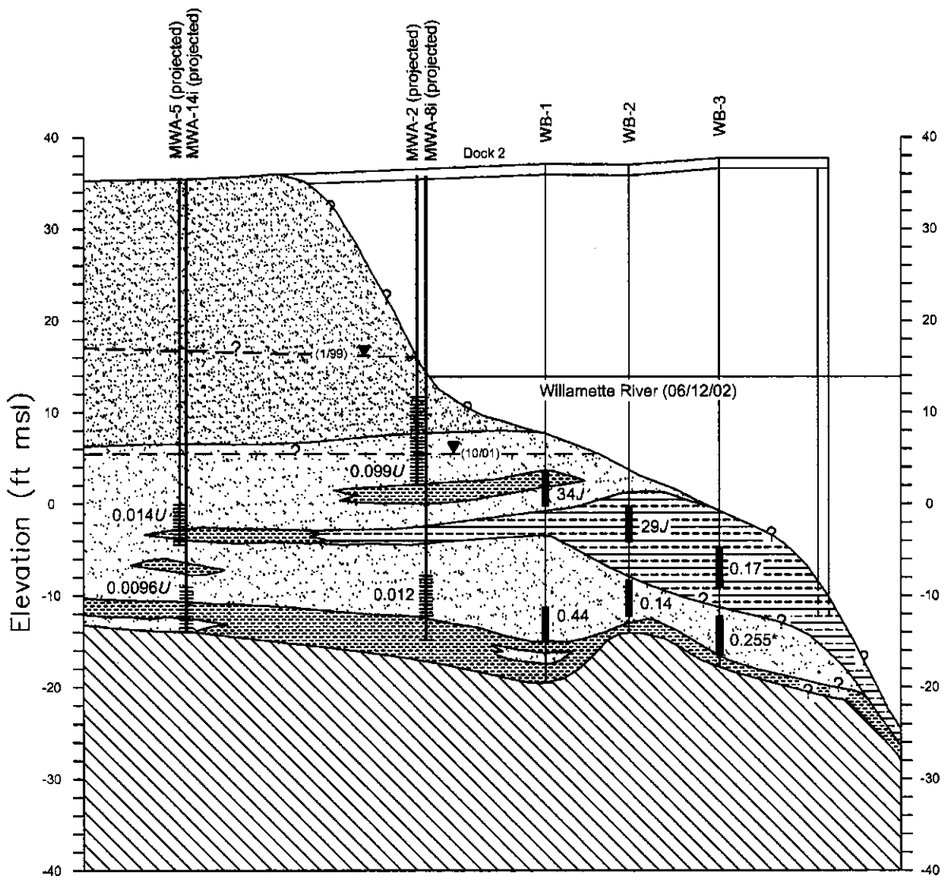
Exponent

Figure 5a. Cross-sections D-D' and E-E' with chlorobenzene concentrations in groundwater

8601192.001.0634\DD/EE.dwg 12/05/03 OR

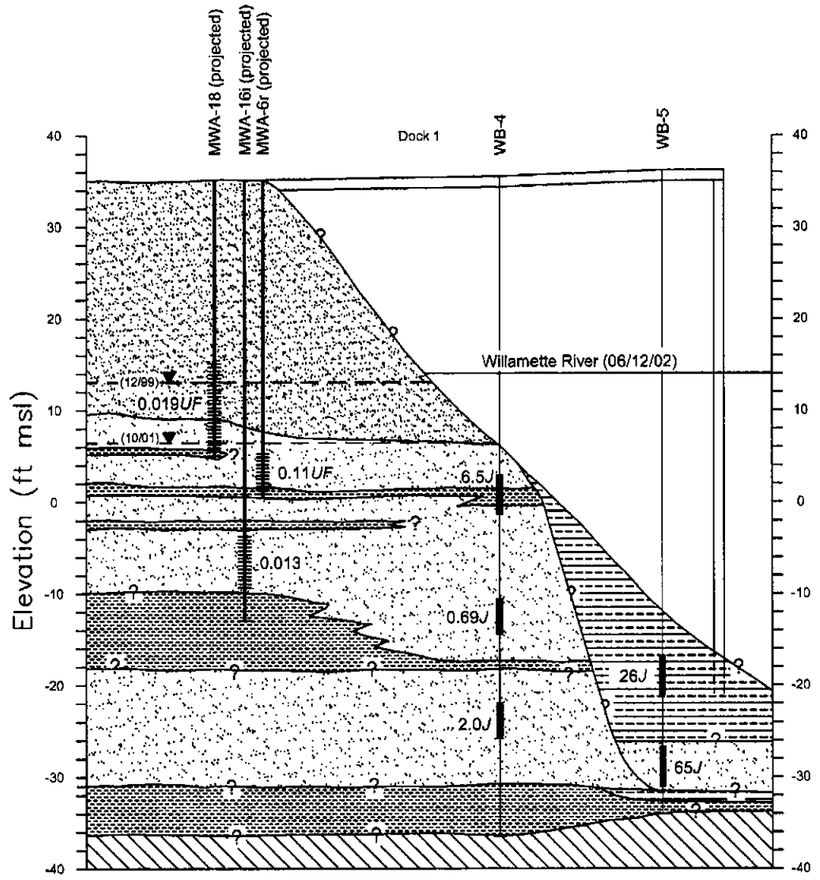
D (Plant west)

D' (Plant east)



E (Plant west)

E' (Plant east)



LEGEND

- Fill with debris
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt

WB-3 — Geoprobe® boring number

MWA-1 — Well number

Cased interval

Screen interval

Boring with grab groundwater sample interval

Shallow zone groundwater surface (approximate)

Inferred soil or geologic contact (queried where uncertain)

F - Field quality control sample (blanks or reference materials) criteria not met

J - Estimated

U - Undetected at detection limt shown

* - Average of sample and sample duplicate

0 80 feet

Note: Vertical scale exaggerated 5x

Note: All concentrations are in micrograms per liter (μg/L).
DDT concentration data in monitoring wells are from April 2002; Geoprobe® boring data are from June 2002.
Samples were collected through a Geoprobe® screen and were unfiltered. This sampling methodology will introduce particulate matter into the aqueous sample; therefore, concentrations of detected pesticides are likely biased high.

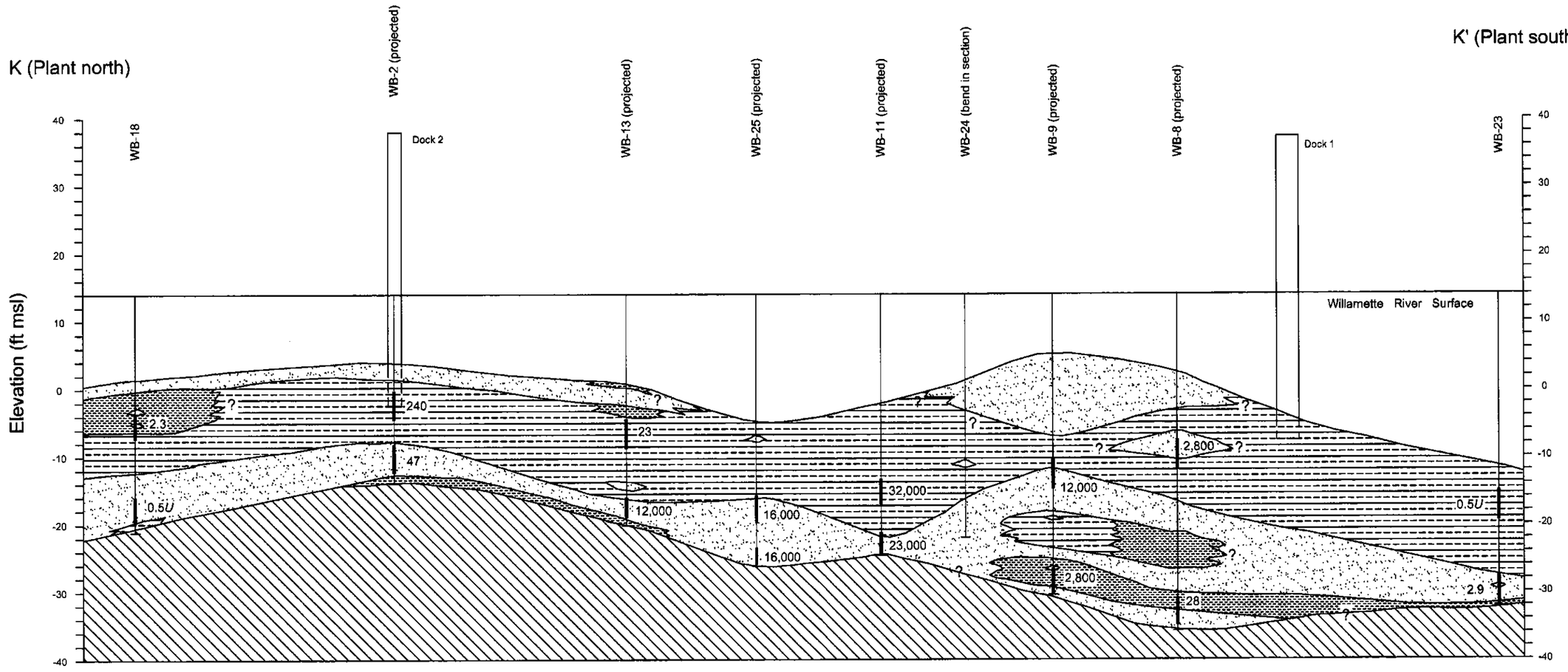
Exponent

Figure 5b. Cross-sections D-D' and E-E' with DDT concentrations in groundwater

8601192.001.0634\DD and EE.dwg 12/05/03 OR

K (Plant north)

K' (Plant south)



LEGEND

- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- WB-3 — Geoprobe® boring number
- Boring with grab groundwater sample interval
- Inferred soil or geologic contact (queried where uncertain)
- * Average of sample and sample duplicate
- J Estimated
- U Undetected at detection limit shown

0 80 feet

Note: Vertical scale exaggerated 5x

Notes: Stratigraphy in portions of WB-8, WB-9 and WB-25 consists of interlayered silts and sands. Contacts on cross-section are interpretive.
All concentrations are in micrograms per liter (μg/L). Chlorobenzene concentrations are from grab groundwater samples collected in June 2002 and February-March 2003.

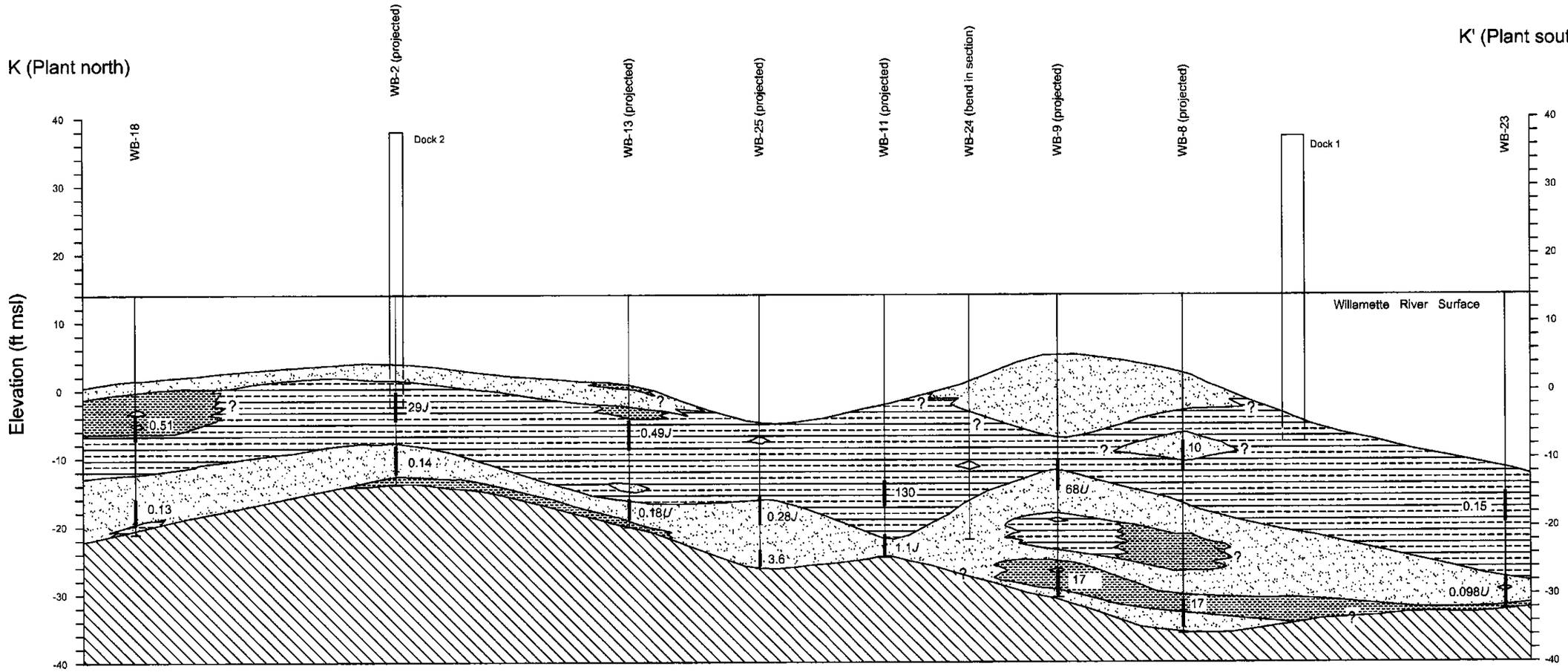
Exponent

Figure 6a. Cross-section K-K' with chlorobenzene concentrations in groundwater

B601192.001.0634\K-K' CHLOR.dwg 12/05/03 OR

K (Plant north)

K' (Plant south)



LEGEND

- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- WB-3 — Geoprobe® boring number
- Boring with grab groundwater sample interval
- Inferred soil or geologic contact (queried where uncertain)
- * Average of sample and sample duplicate
- *J* Estimated
- *U* Undetected at detection limit shown

0 80 feet

Note: Vertical scale exaggerated 5x

Notes: Stratigraphy in portions of WB-8, WB-9 and WB-25 consists of interlayered silts and sands. Contacts on cross-section are interpretive.
All concentrations are in micrograms per liter (μg/L). DDT concentrations are from grab groundwater samples collected in June 2002 and February-March 2003.
Samples were collected through a Geoprobe® screen and were unfiltered. This sampling methodology will introduce particulate matter into the aqueous sample; therefore, concentrations of detected pesticides are likely biased high.

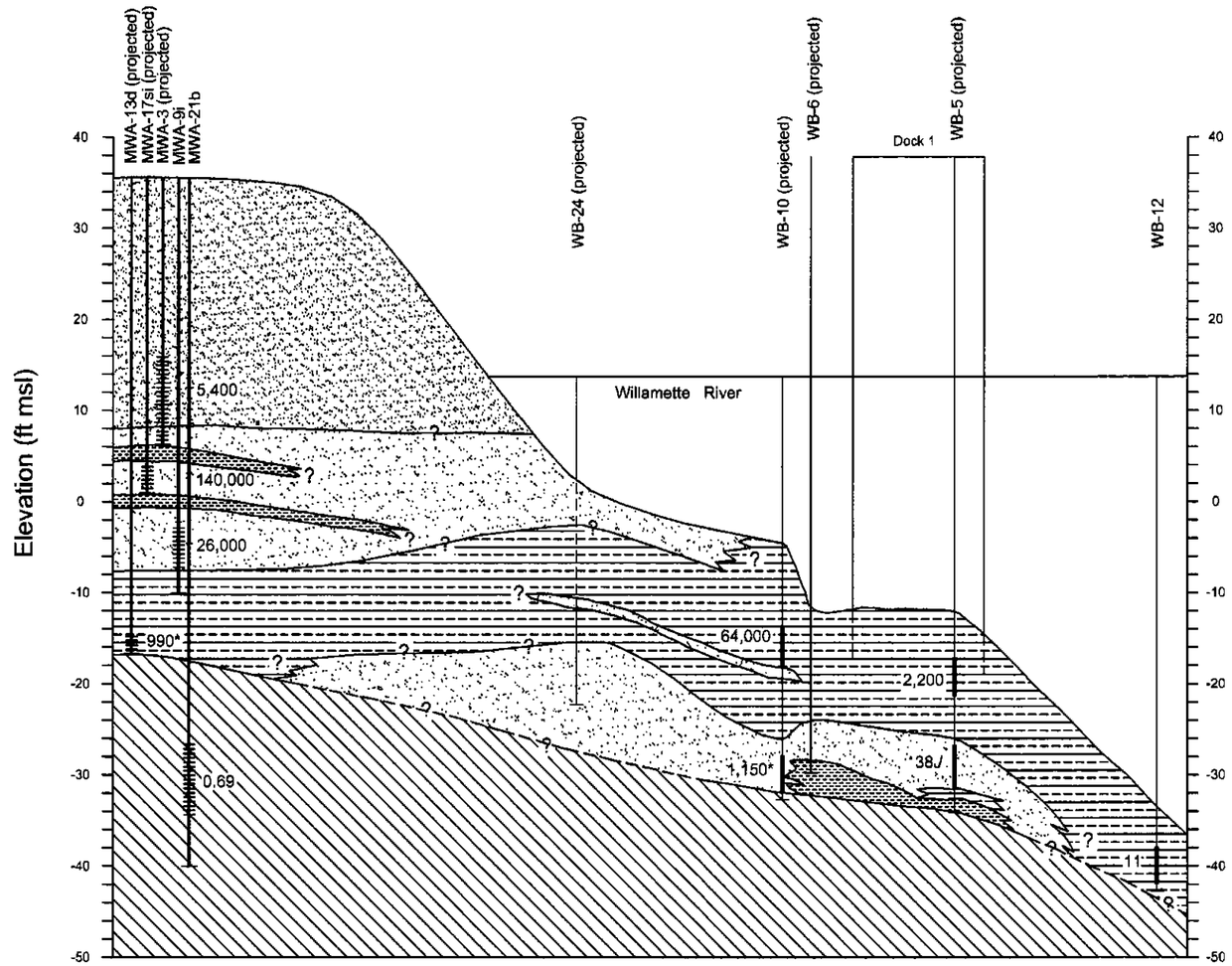
Exponent

Figure 6b. Cross-section K-K' with DDT concentrations in groundwater

8601192.001.0634\K-K' DDT.dwg 12/05/03 OR

L (Plant northwest)

L' (Plant southeast)



LEGEND

- Fill with debris
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt

WB-24 — Geoprobe® boring number

Boring with grab groundwater sample interval

MWA-21b — Well number

Cased interval

Screen interval

Inferred soil or geologic contact (queried where uncertain)

* Average of sample and sample duplicate

J Estimated

0 80 feet

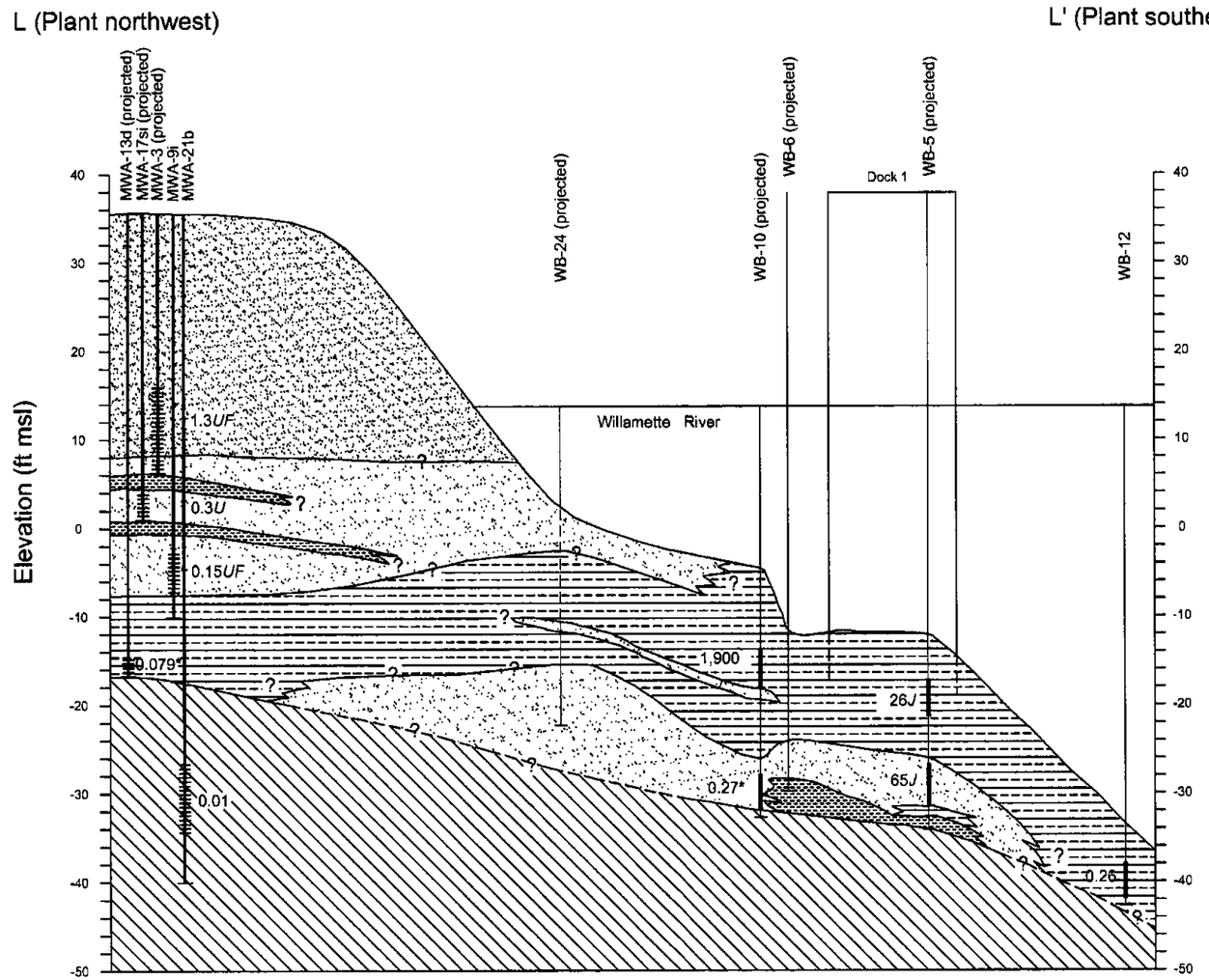
Note: Vertical scale exaggerated 5x

Notes: All concentrations are in micrograms per liter (μg/L). Chlorobenzene concentrations are from grab groundwater samples collected in June 2002 and February-March 2003. Chlorobenzene concentrations in monitoring wells are from April 2002.

Exponent

Figure 7a. Cross-section L-L' with chlorobenzene concentrations in groundwater

B601192.001.0634\L-L' CHLOR.dwg 12/05/03 OR



LEGEND

- Fill with debris
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt

WB-24 — Geoprobe® boring number

Boring with grab groundwater sample interval

MWA-21b — Well number

Cased interval

Screen interval

Inferred soil or geologic contact (queried where uncertain)

* Average of sample and sample duplicate
F Field quality control sample (blanks or reference materials) criteria not met
J Estimated
U Undetected at detection limit shown

0 80 feet

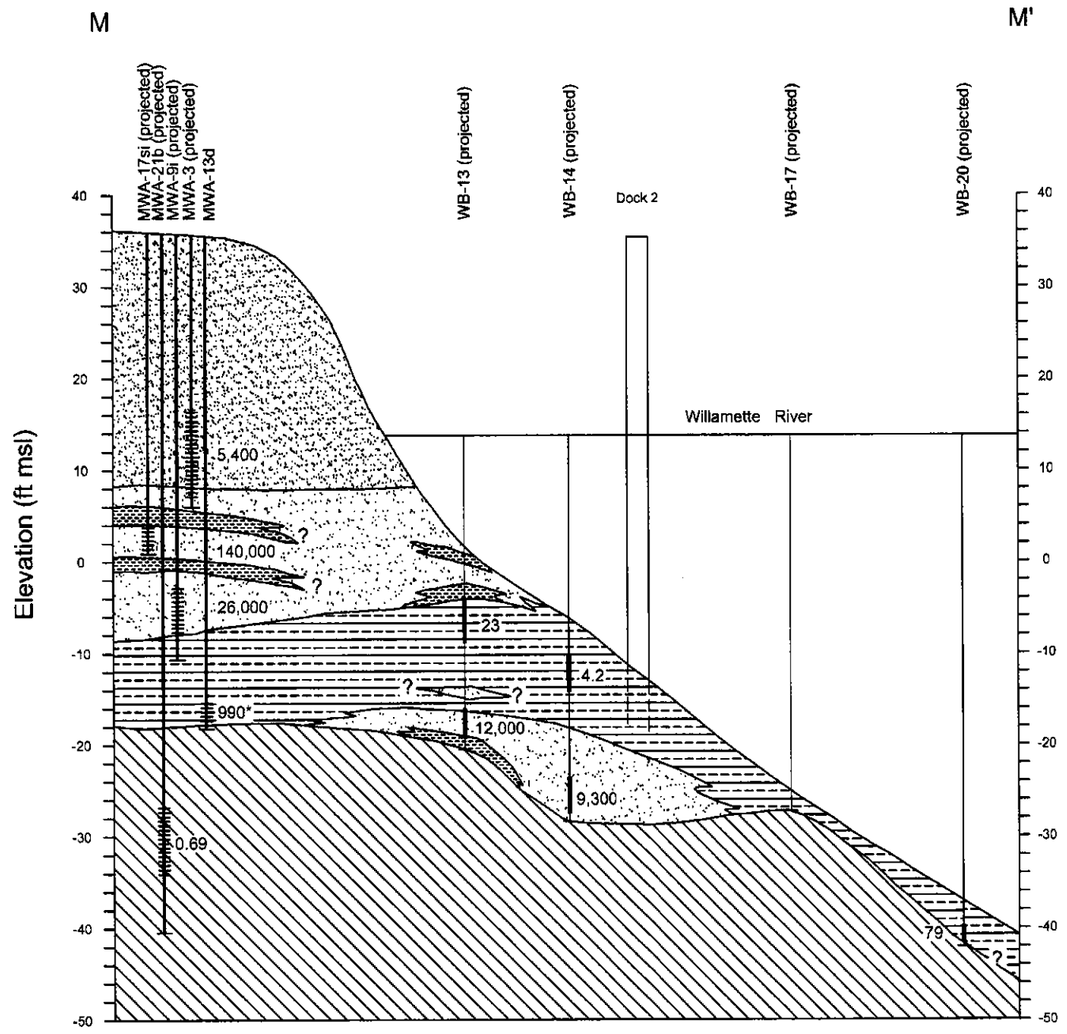
Note: Vertical scale exaggerated 5x

Notes: All concentrations are in micrograms per liter (μg/L). DDT concentrations are from grab groundwater samples collected in June 2002 and February-March 2003.
Samples were collected through a Geoprobe® screen and were unfiltered. This sampling methodology will introduce particulate matter into the aqueous sample; therefore, concentrations of detected pesticides are likely biased high.
DDT concentrations in monitoring wells are from April 2002.

Exponent

Figure 7b. Cross-section L-L' with DDT concentrations in groundwater

8601192.001.0634\L-L' DDT.dwg 12/05/03 OR



LEGEND

- Fill with debris
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt

WB-24 — Geoprobe® boring number

Boring with grab groundwater sample interval

MWA-21b — Well number

Cased interval

Screen interval

Inferred soil or geologic contact (queried where uncertain)

* Average of sample and sample duplicate

J Estimated

0 80 feet

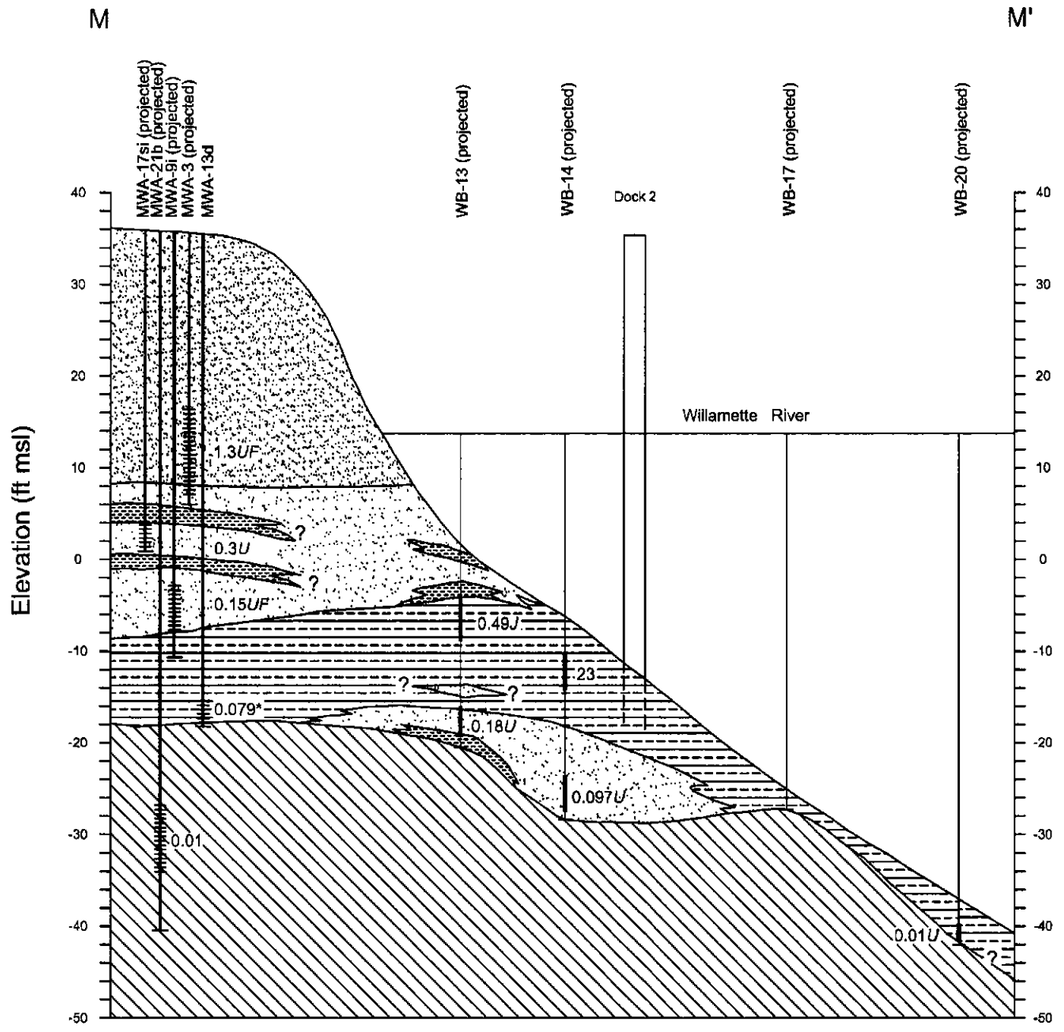
Note: Vertical scale exaggerated 5x

Notes: All concentrations are in micrograms per liter ($\mu g/L$). Chlorobenzene concentrations in WB boreholes are from grab groundwater samples collected in June 2002 and February-March 2003. Chlorobenzene concentrations in monitoring wells are from April 2002.

Exponent

Figure 8a. Cross-section M-M' with chlorobenzene concentrations in groundwater

8601192.001.0634\M-M' CHLOR.dwg 12/05/03 OR



LEGEND

- Fill with debris
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt

WB-24 — Geoprobe® boring number

Boring with grab groundwater sample interval

MWA-21b — Well number

Cased interval

Screen interval

Inferred soil or geologic contact (queried where uncertain)

* Average of sample and sample duplicate
F Field quality control sample (blanks or reference materials) criteria not met
J Estimated
U Undetected at detection limit shown

0 80 feet

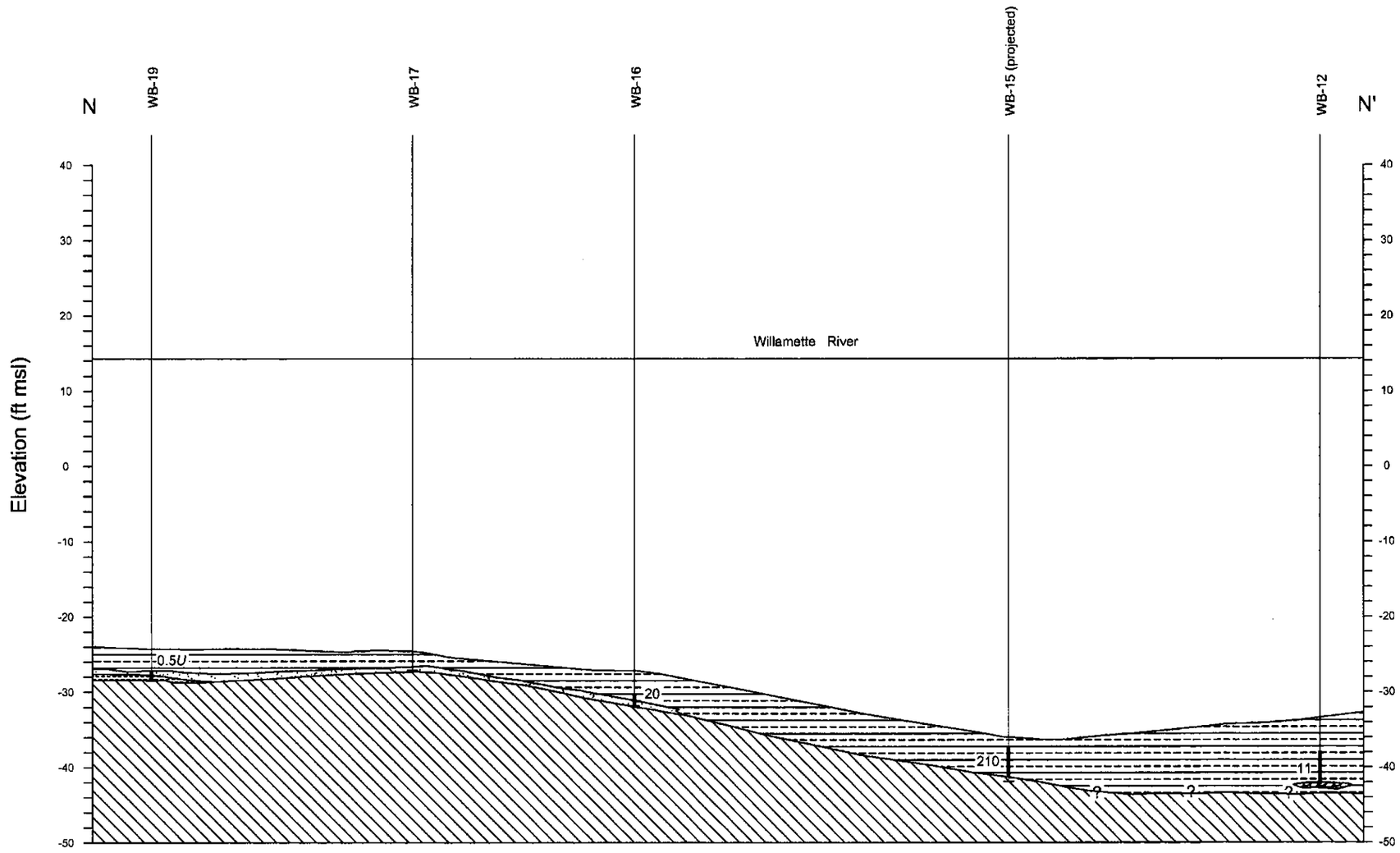
Note: Vertical scale exaggerated 5x

Notes: All concentrations are in micrograms per liter (μg/L). DDT concentrations in WB boreholes are from grab groundwater samples collected in June 2002 and February-March 2003. DDT concentrations in monitoring wells are from April 2002.
Samples were collected through a Geoprobe® screen and were unfiltered. This sampling methodology will introduce particulate matter into the aqueous sample; therefore, concentrations of detected pesticides are likely biased high.

Exponent

Figure 8b. Cross-section M-M' with DDT concentrations in groundwater

8601192.001.0634\M-M' DDT.dwg 12/05/03 OR



LEGEND

- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Gravel
- WB-24 — Geoprobe® boring number
- Boring with grab groundwater sample interval
- MWA-21b — Well number
- Cased interval
- Screen interval
- Inferred soil or geologic contact (queried where uncertain)
- * Average of sample and sample duplicate
- J Estimated
- U Undetected at detection limit shown

0 80 feet

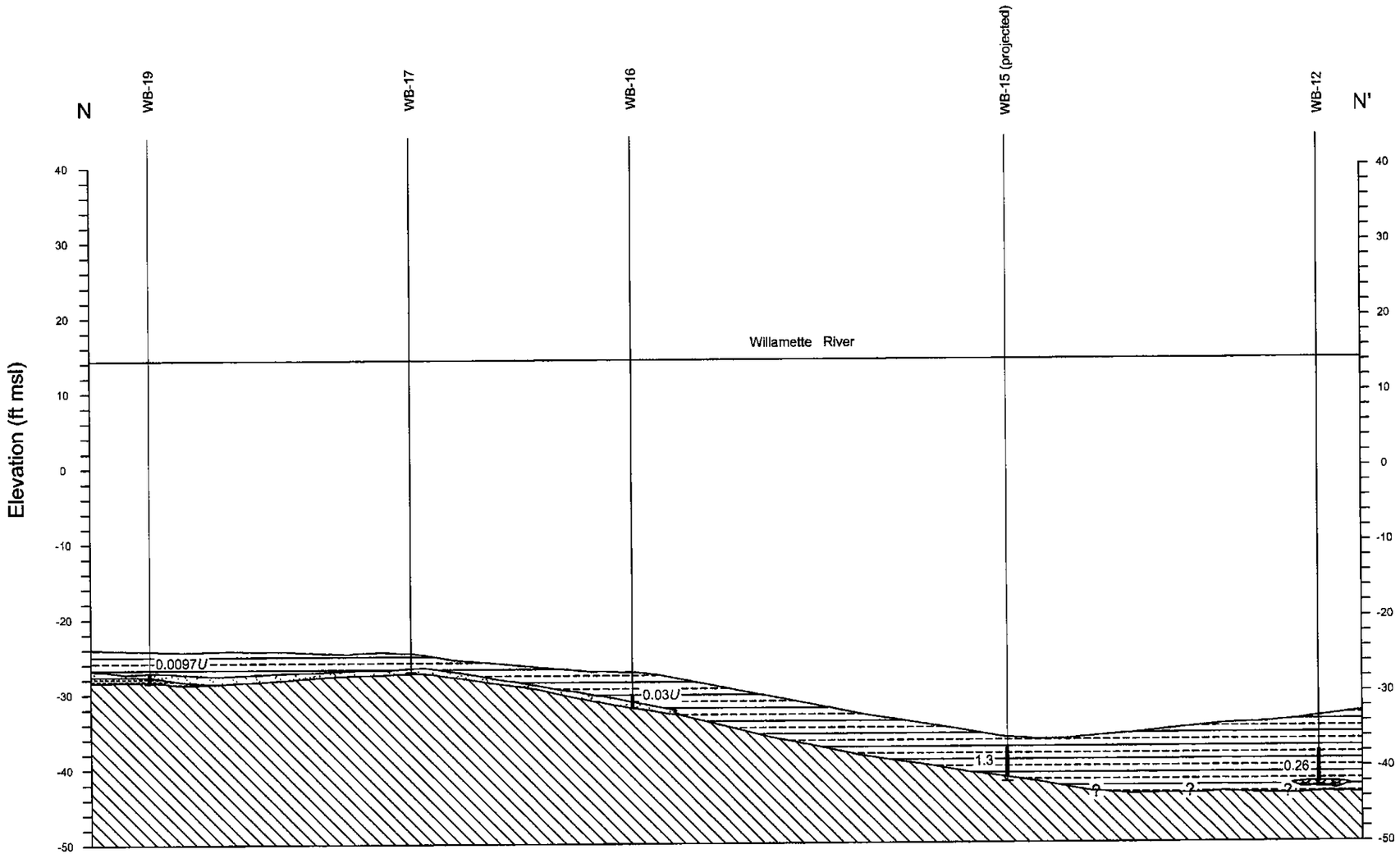
Note: Vertical scale exaggerated 5x

Notes: All concentrations are in micrograms per liter (μg/L). Chlorobenzene concentrations are from grab groundwater samples collected in June 2002 and February-March 2003.

Exponent

Figure 9a. Cross-section N-N' with chlorobenzene concentrations in groundwater

B601192.001.0634\L-L' CHLOR.dwg 12/05/03 OR



LEGEND

- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Gravel

WB-24 — Geoprobe® boring number

Boring with grab groundwater sample interval

MWA-21b — Well number

Cased interval

Screen interval

Inferred soil or geologic contact (queried where uncertain)

* Average of sample and sample duplicate
J Estimated
U Undetected at detection limit shown

0 80 feet

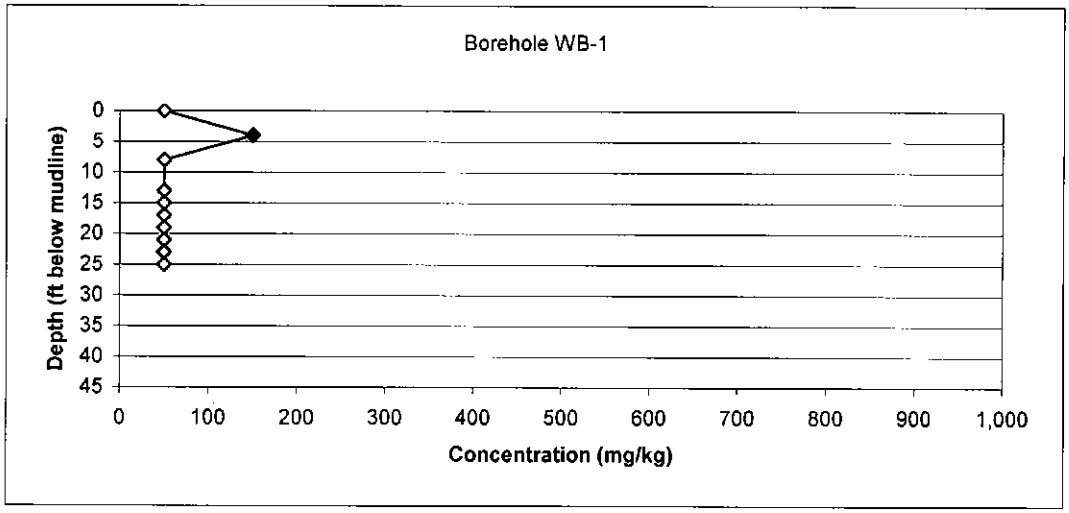
Note: Vertical scale exaggerated 5x

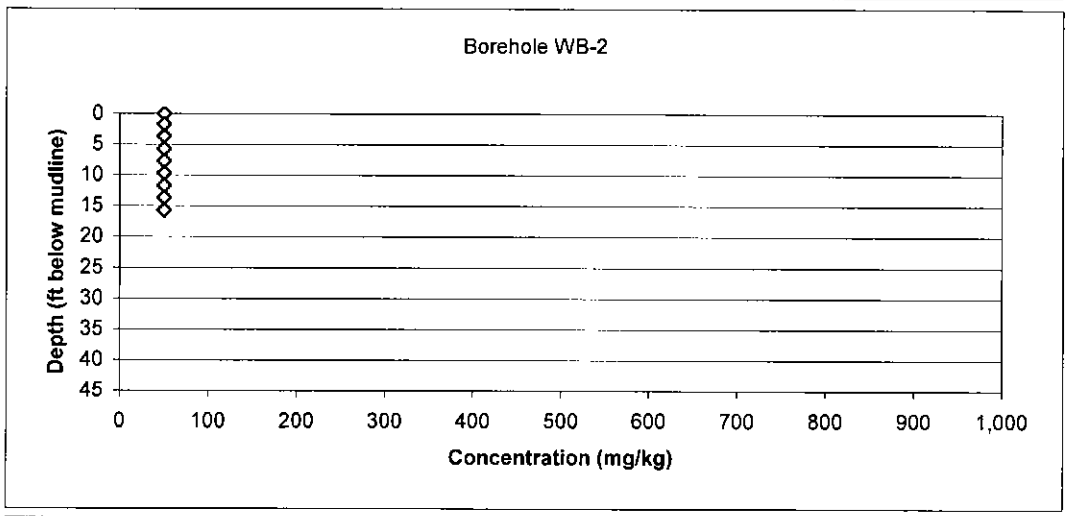
Notes: All concentrations are in micrograms per liter (μg/L). DDT concentrations are from grab groundwater samples collected in June 2002 and February-March 2003.
Samples were collected through a Geoprobe® screen and were unfiltered. This sampling methodology will introduce particulate matter into the aqueous sample; therefore, concentrations of detected pesticides are likely biased high.

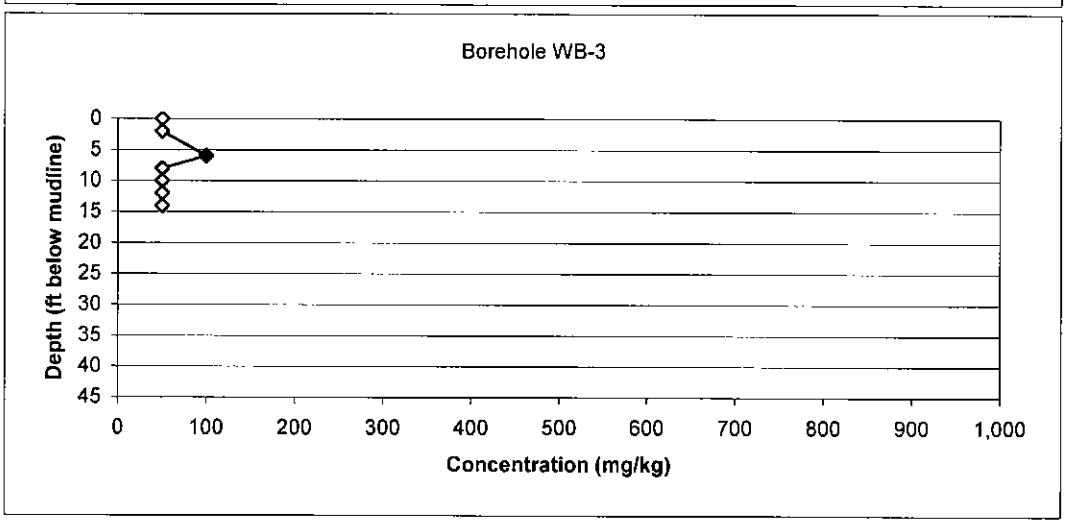
Exponent

Figure 9b. Cross-section N-N' with DDT concentrations in groundwater

B601192.001.0634\N-N' DDT.dwg 12/05/03 OR







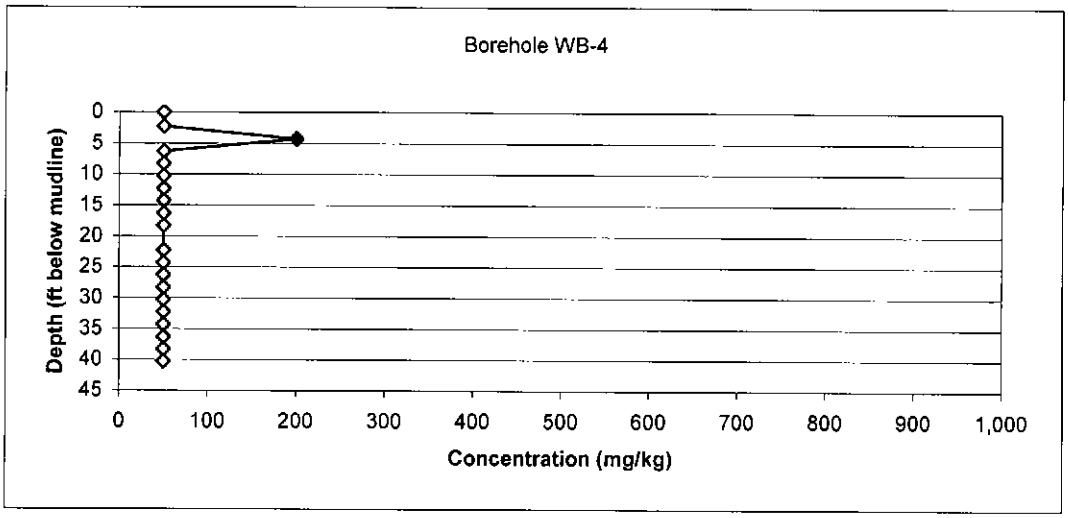
◇ DDT by TLC (open symbol - undetected[a])

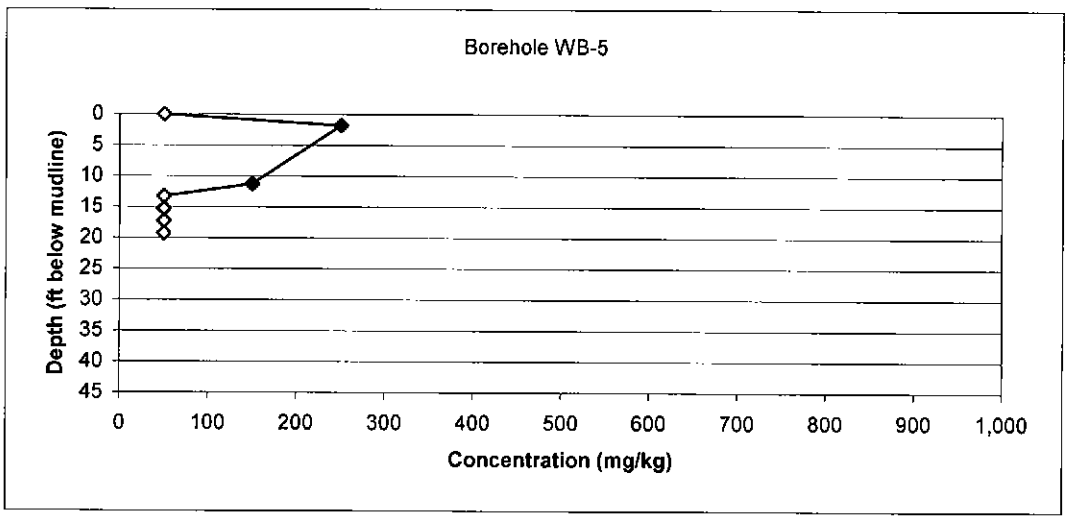
◆ DDT by TLC (filled symbol - detected)

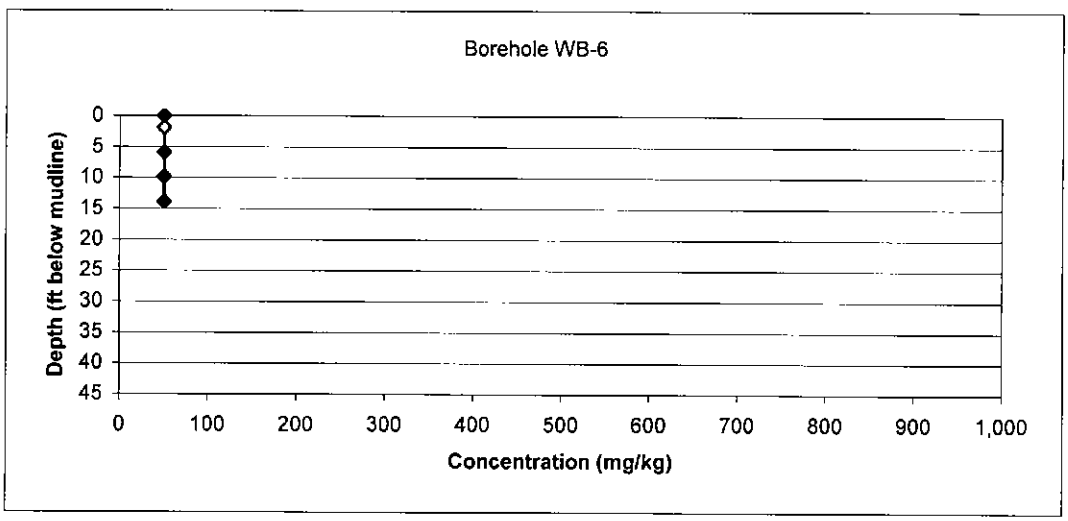
[a] Concentration represents detection limit

Figure 10. Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.







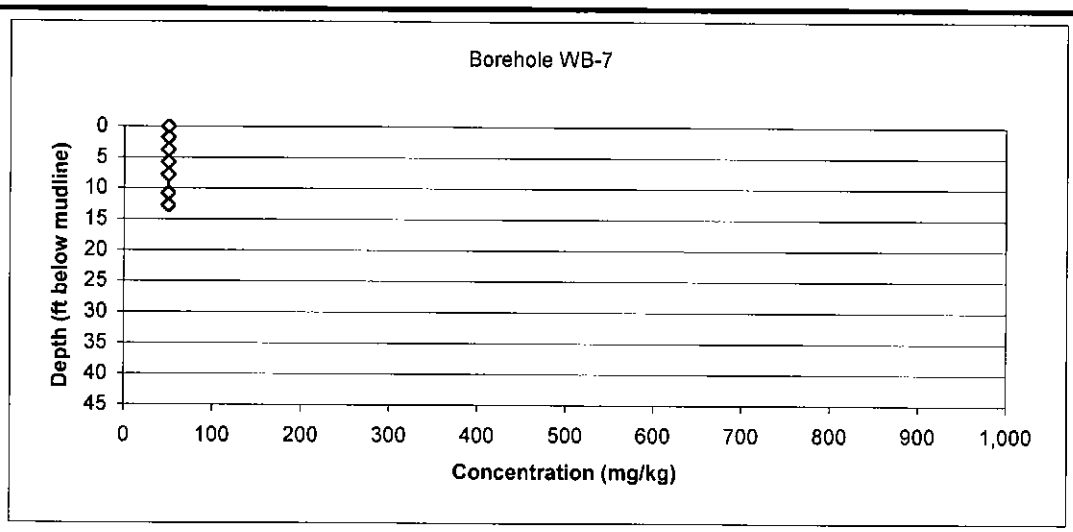
◇ DDT by TLC (open symbol - undetected[a])

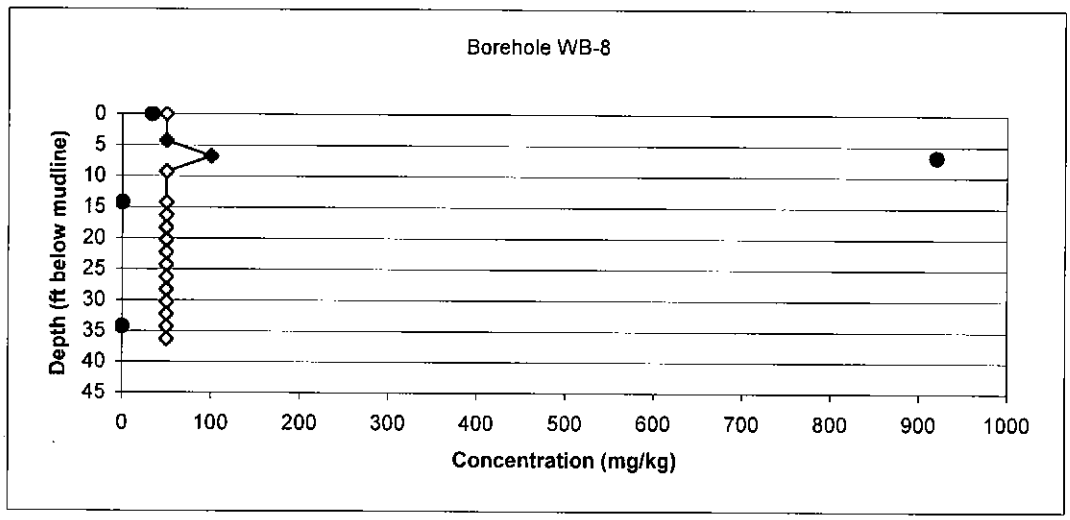
◆ DDT by TLC (filled symbol - detected)

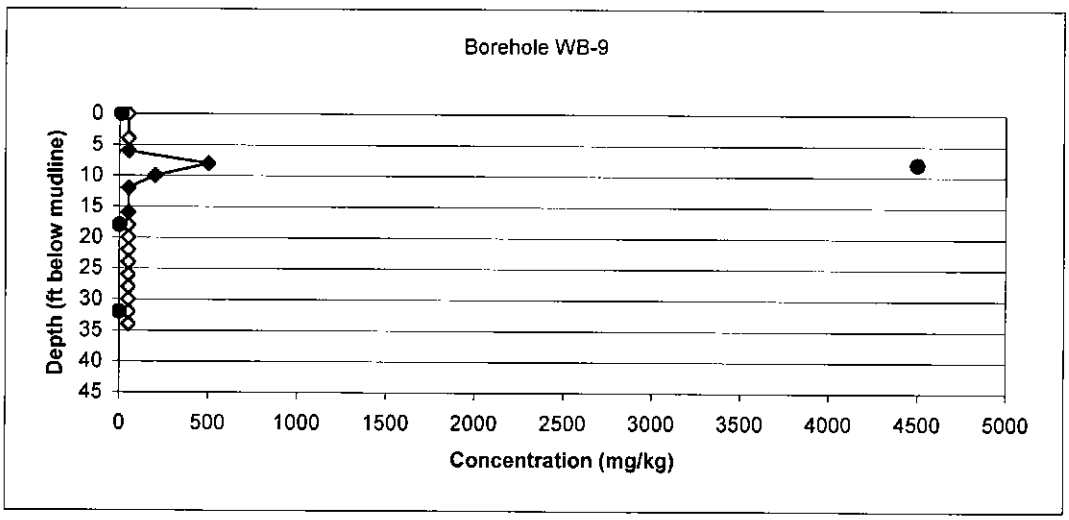
[a] Concentration represents detection limit

Figure 10 (con't). Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.





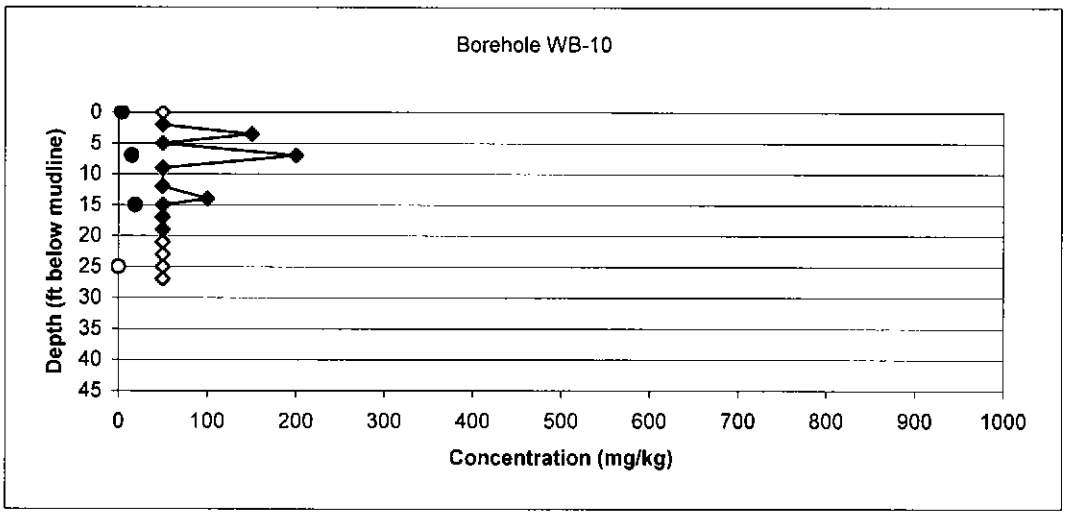


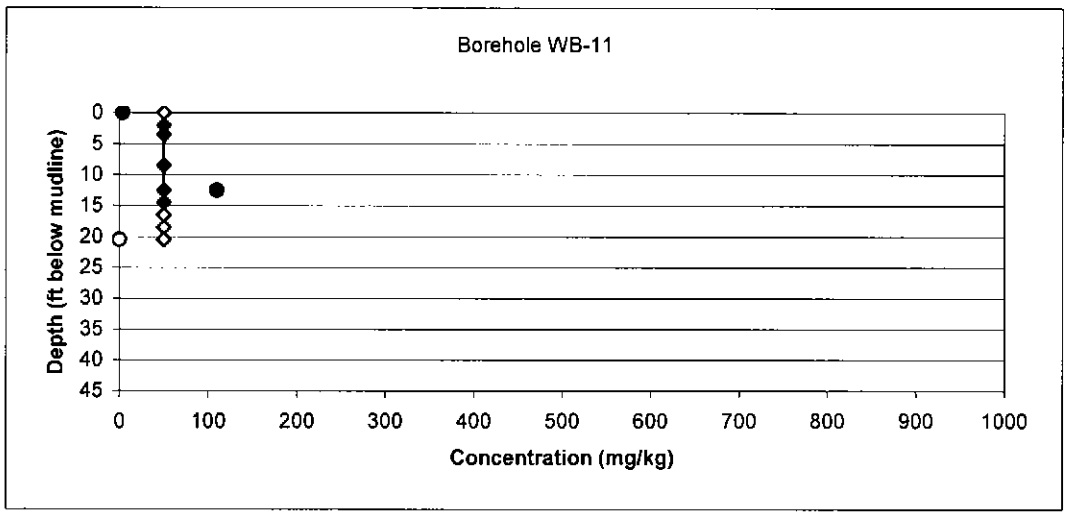
◇ DDT by TLC (open symbol - undetected[a])
◆ DDT by TLC (filled symbol - detected)
○ DDT by 8081A (open symbol - undetected[a])
● DDT by 8081A (filled symbol - detected)

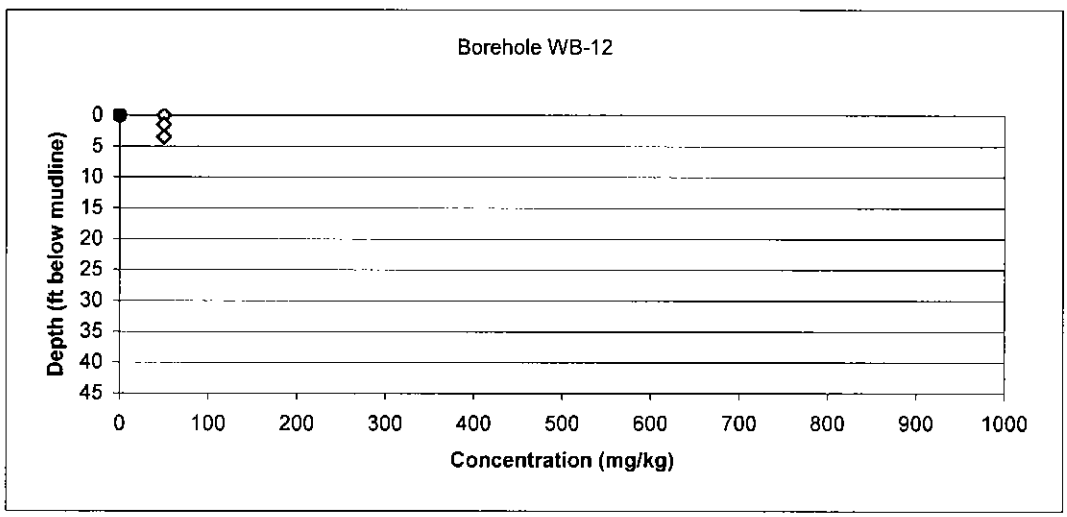
[a] Concentration represents detection limit

Figure 10 (con't). Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.





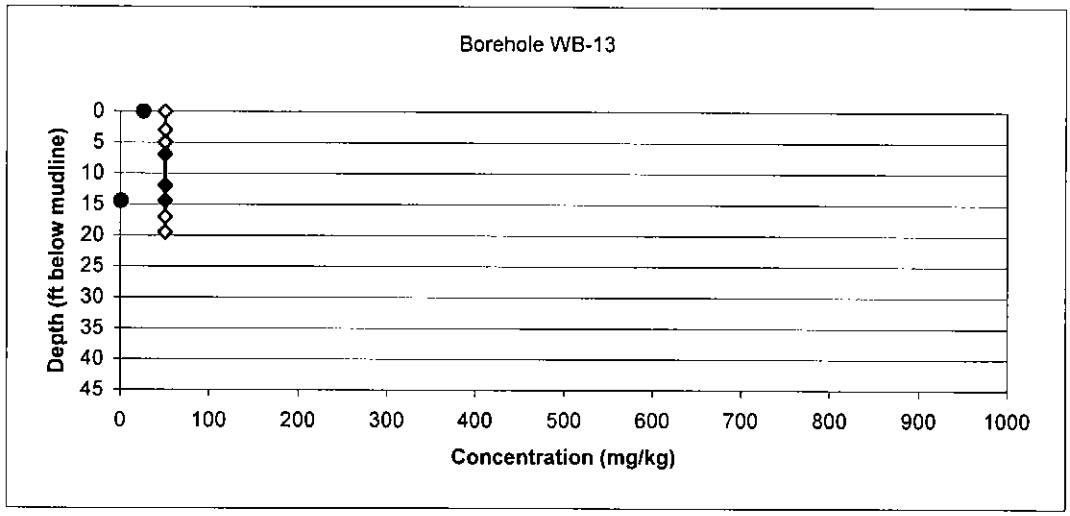


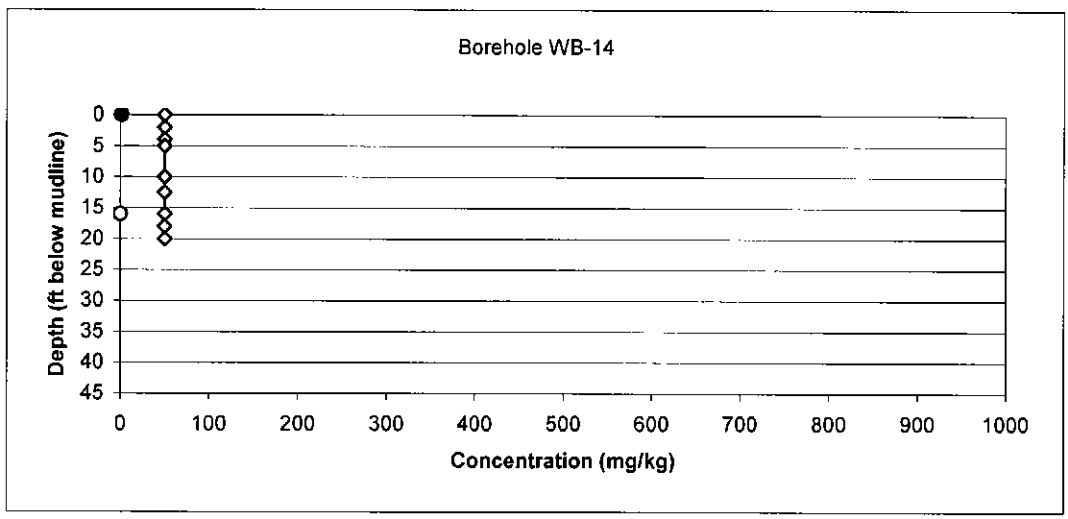
◇ DDT by TLC (open symbol - undetected[a])
◆ DDT by TLC (filled symbol - detected)
○ DDT by 8081A (open symbol - undetected[a])
● DDT by 8081A (filled symbol - detected)

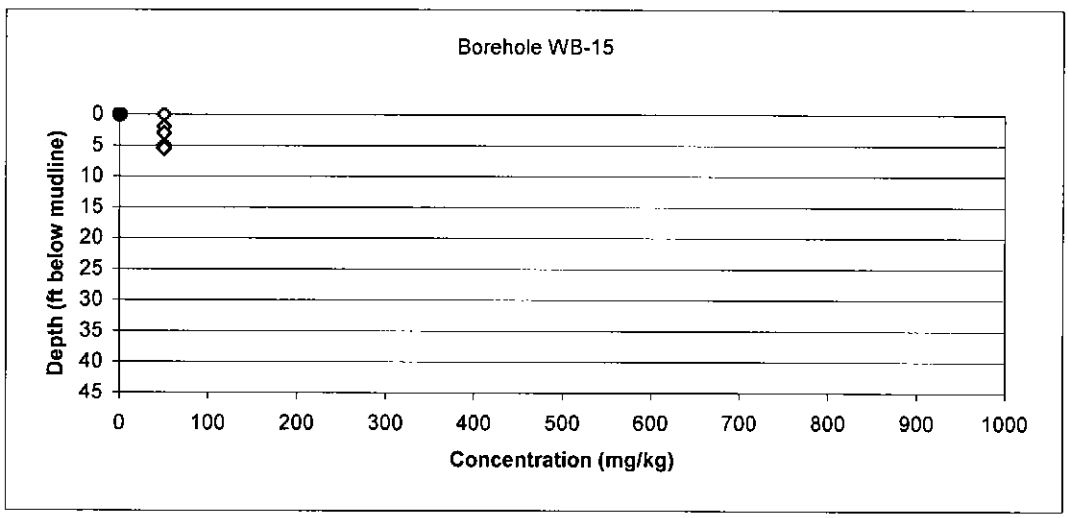
[a] Concentration represents detection limit

Figure 10 (con't). Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.





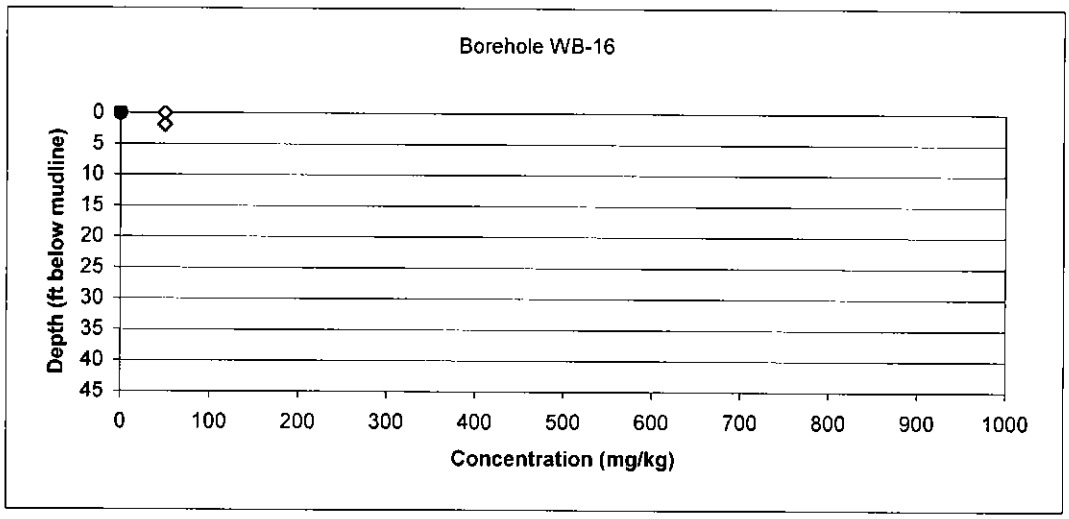


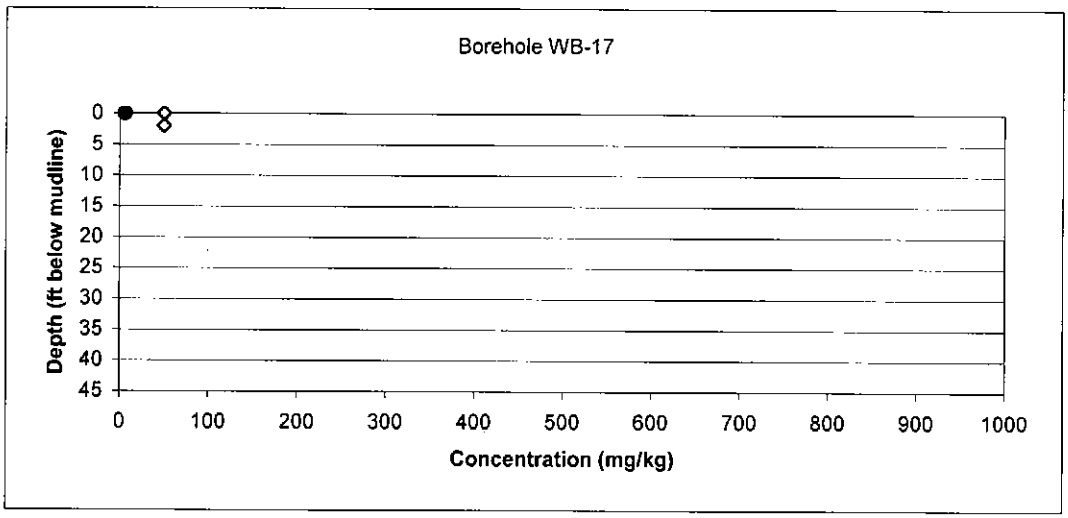
◇ DDT by TLC (open symbol - undetected[a])
◆ DDT by TLC (filled symbol - detected)
○ DDT by 8081A (open symbol - undetected[a])
● DDT by 8081A (filled symbol - detected)

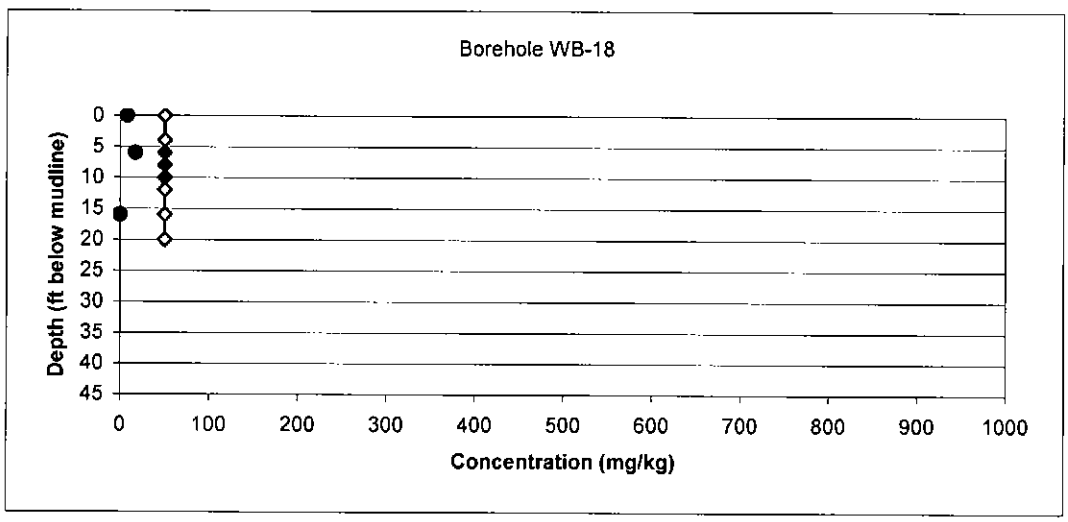
[a] Concentration represents detection limit

Figure 10 (con't). Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.





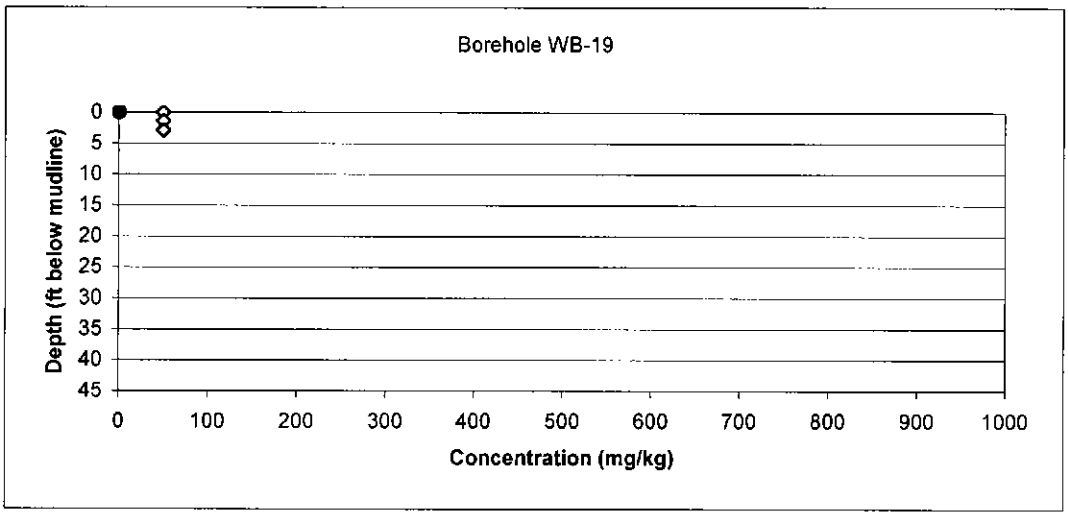


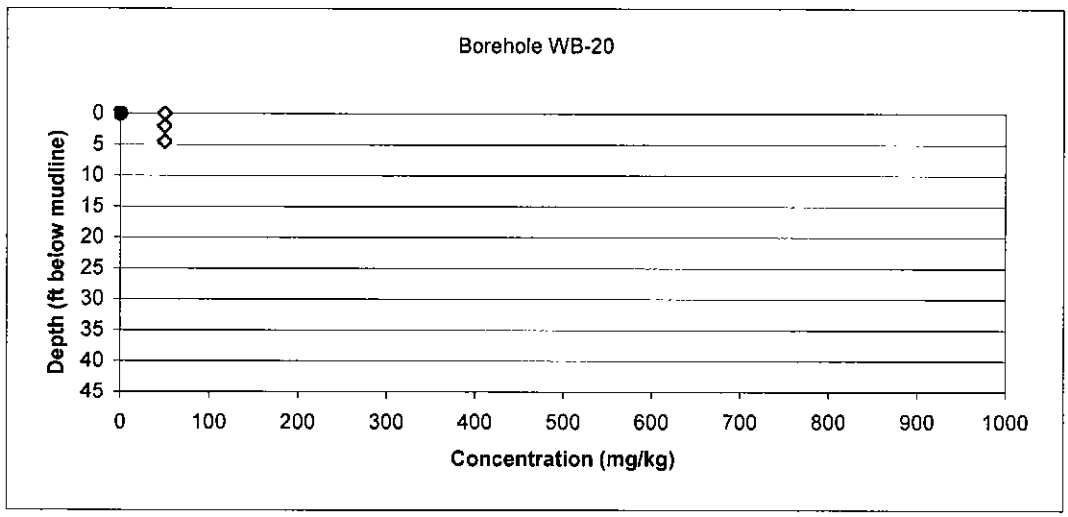
◇ DDT by TLC (open symbol - undetected[a])
◆ DDT by TLC (filled symbol - detected)
○ DDT by 8081A (open symbol - undetected[a])
● DDT by 8081A (filled symbol - detected)

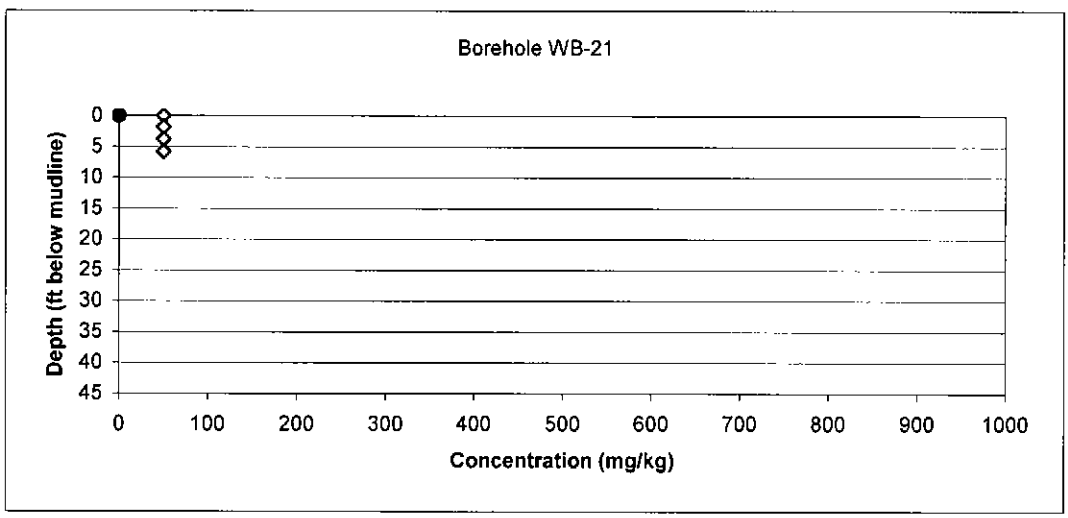
[a] Concentration represents detection limit

Figure 10 (con't). Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.





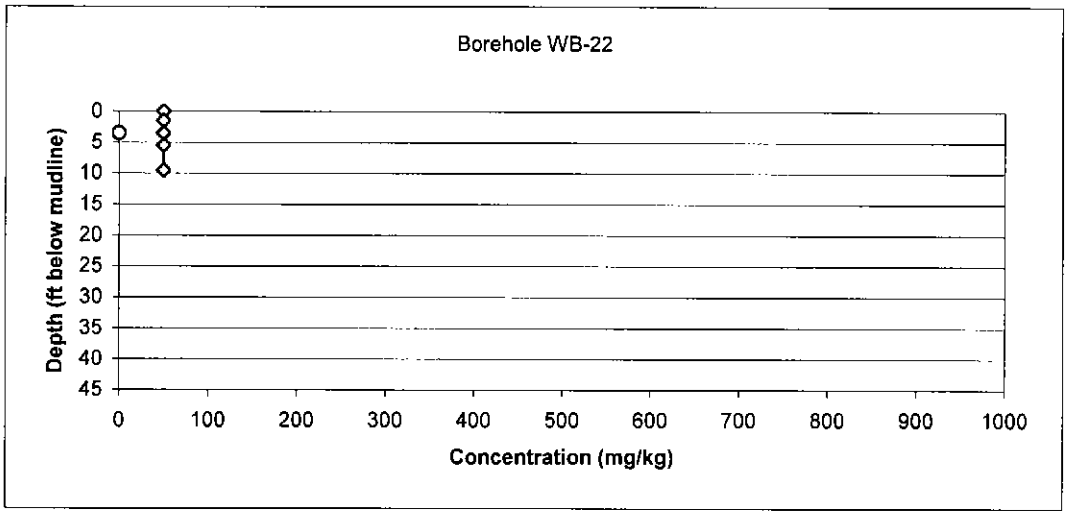


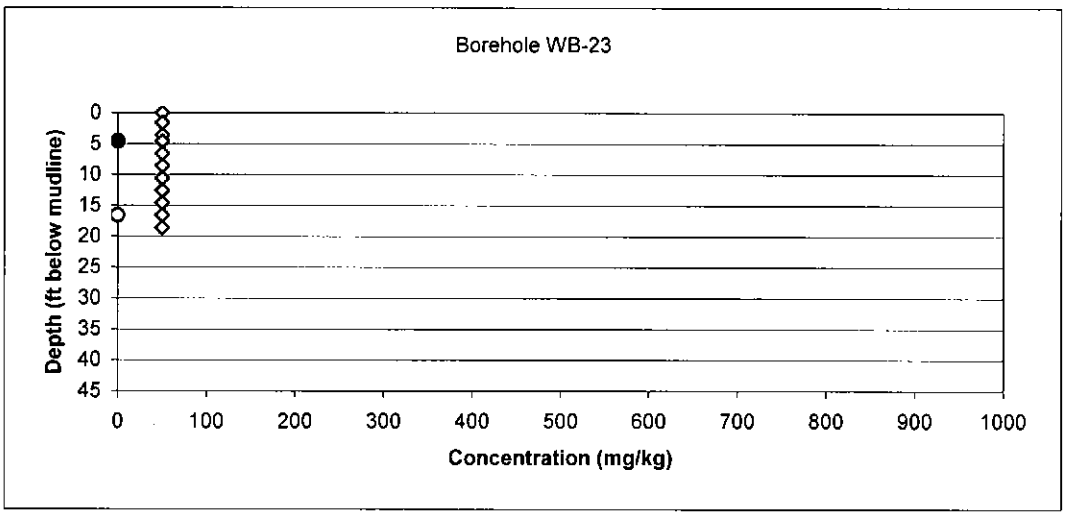
◇ DDT by TLC (open symbol - undetected[a])
◆ DDT by TLC (filled symbol - detected)
○ DDT by 8081A (open symbol - undetected[a])
● DDT by 8081A (filled symbol - detected)

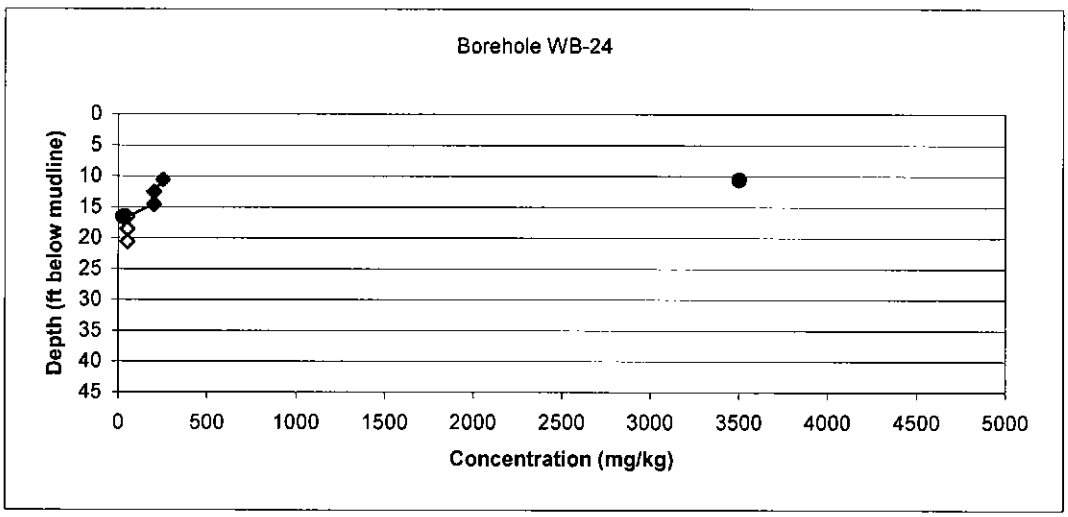
[a] Concentration represents detection limit

Figure 10 (con't). Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.





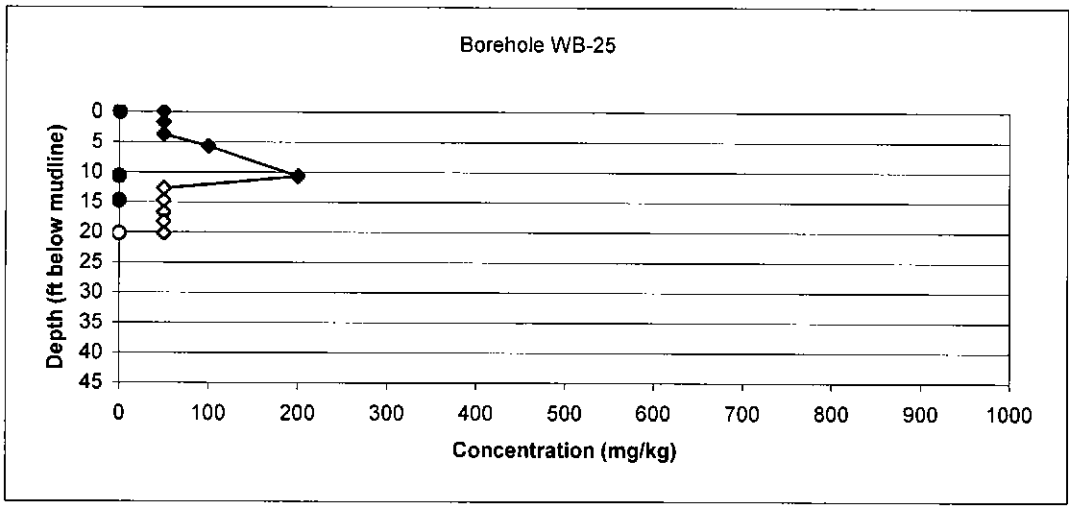


◇ DDT by TLC (open symbol - undetected[a])
◆ DDT by TLC (filled symbol - detected)
○ DDT by 8081A (open symbol - undetected[a])
● DDT by 8081A (filled symbol - detected)

[a] Concentration represents detection limit

Figure 10 (con't). Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.



◇ DDT by TLC (open symbol - undetected[a])
◆ DDT by TLC (filled symbol - detected)
○ DDT by 8081A (open symbol - undetected[a])
● DDT by 8081A (filled symbol - detected)

[a] Concentration represents detection limit

Figure 10 (con't). Vertical distribution of DDT in Phase II borehole sediments.

integral consulting inc.

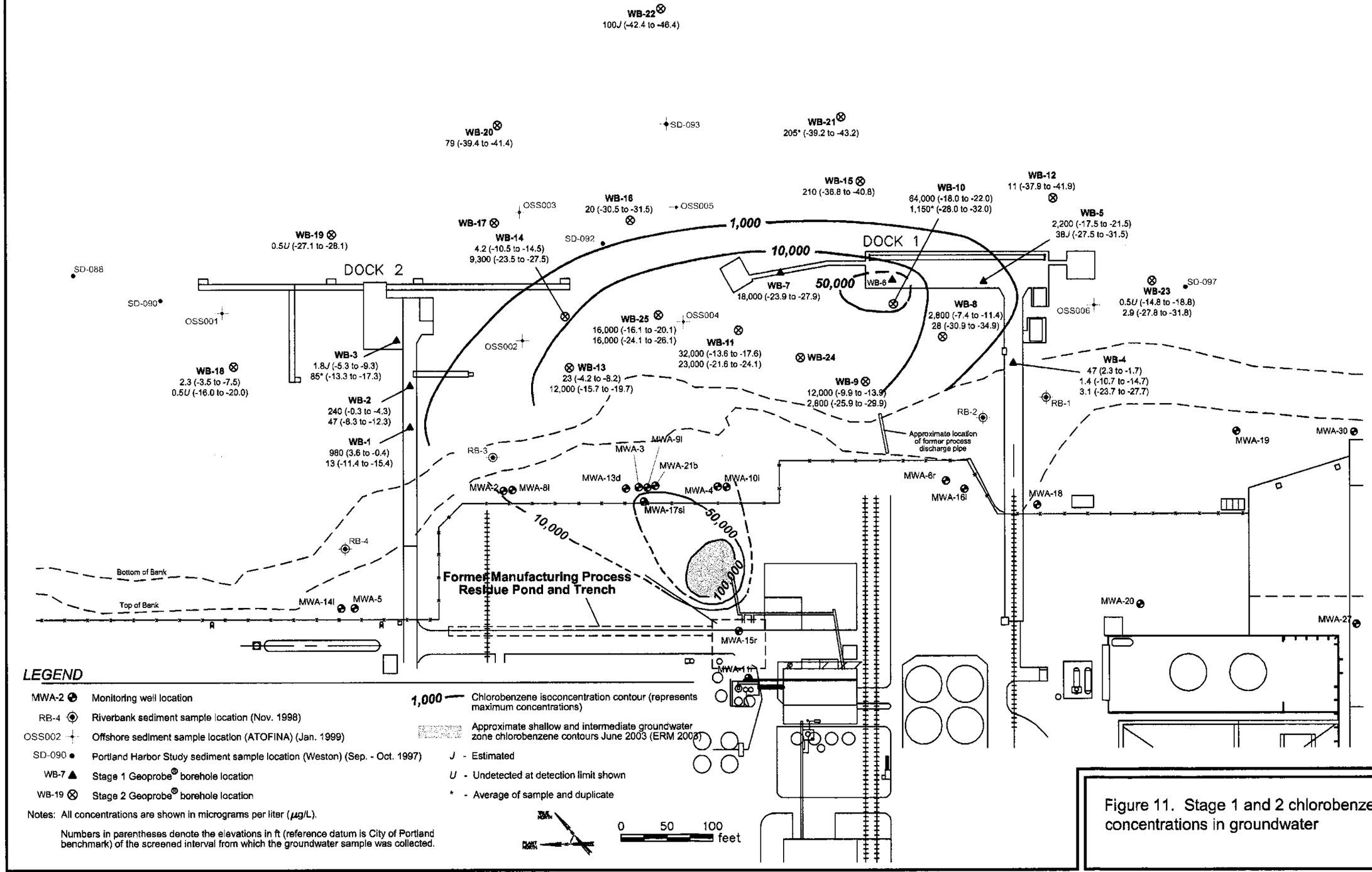


Figure 11. Stage 1 and 2 chlorobenzene concentrations in groundwater

8601192.001.0634/CHLOR GW.dwg 12/05/03 OR

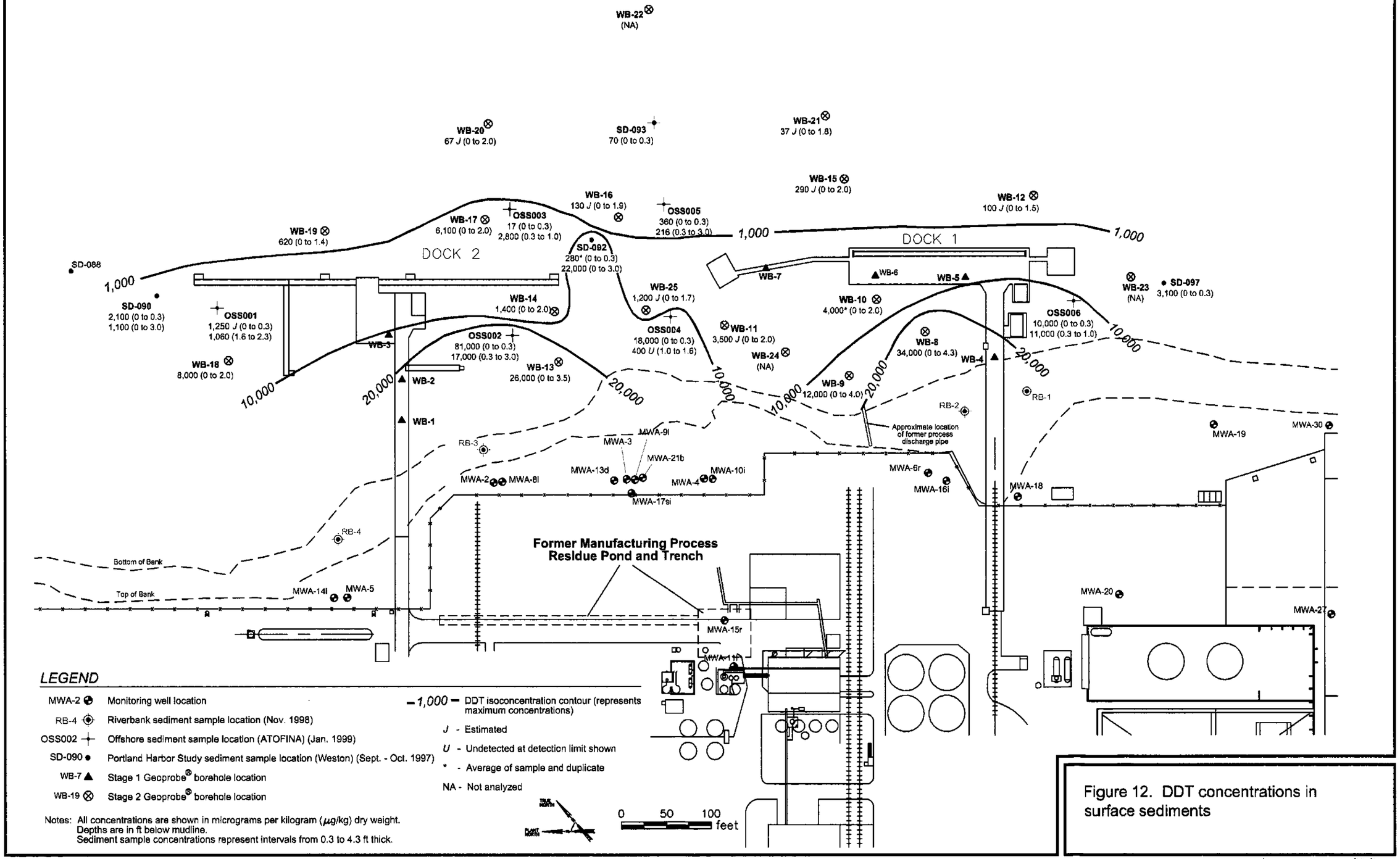


Figure 12. DDT concentrations in surface sediments

8601192.001.0612/DDT surfsed.dwg 12/05/03 OR

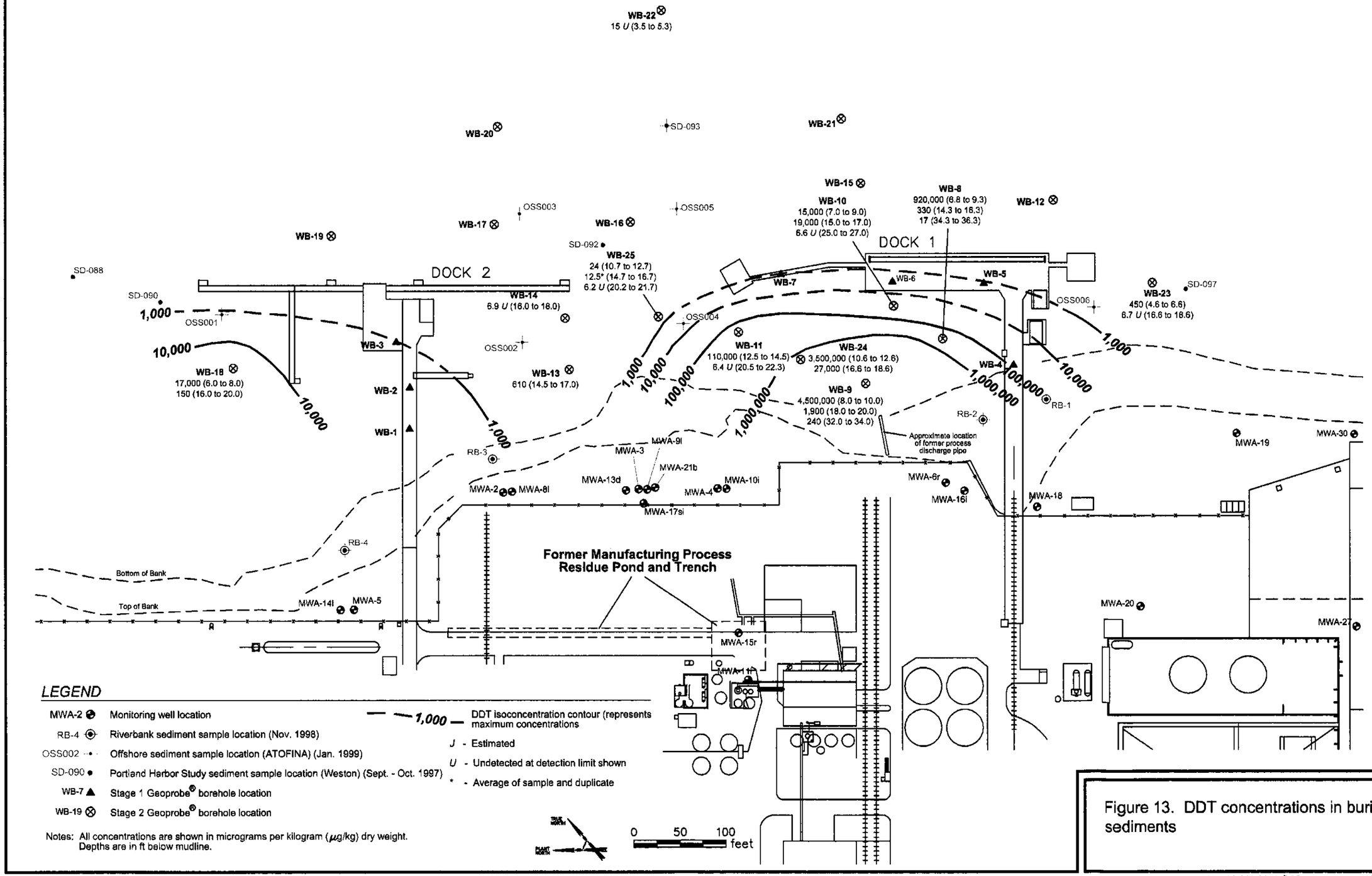
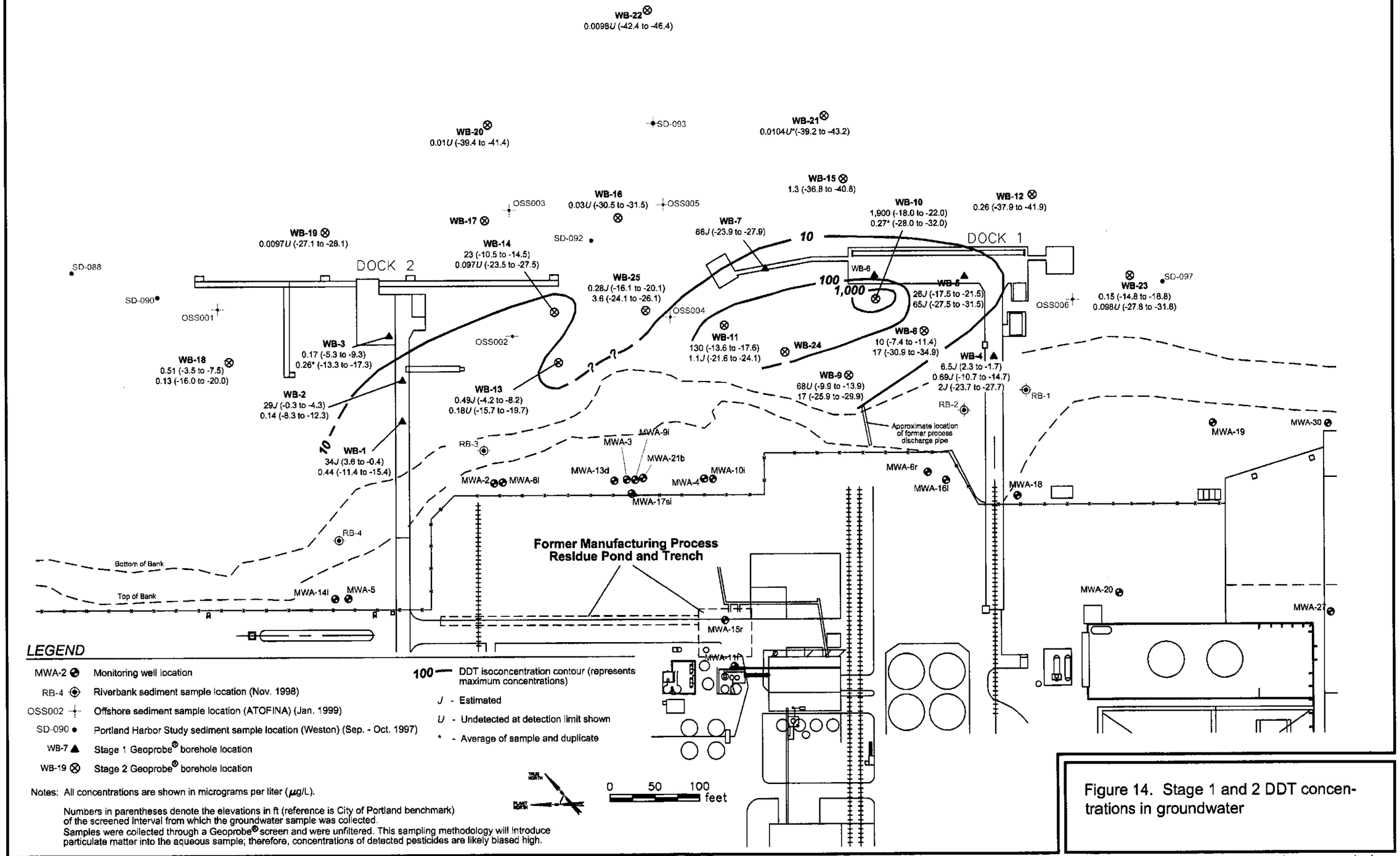


Figure 13. DDT concentrations in buried sediments

8601192.001.0612/DDT deepsed.dwg 12/05/03 OR

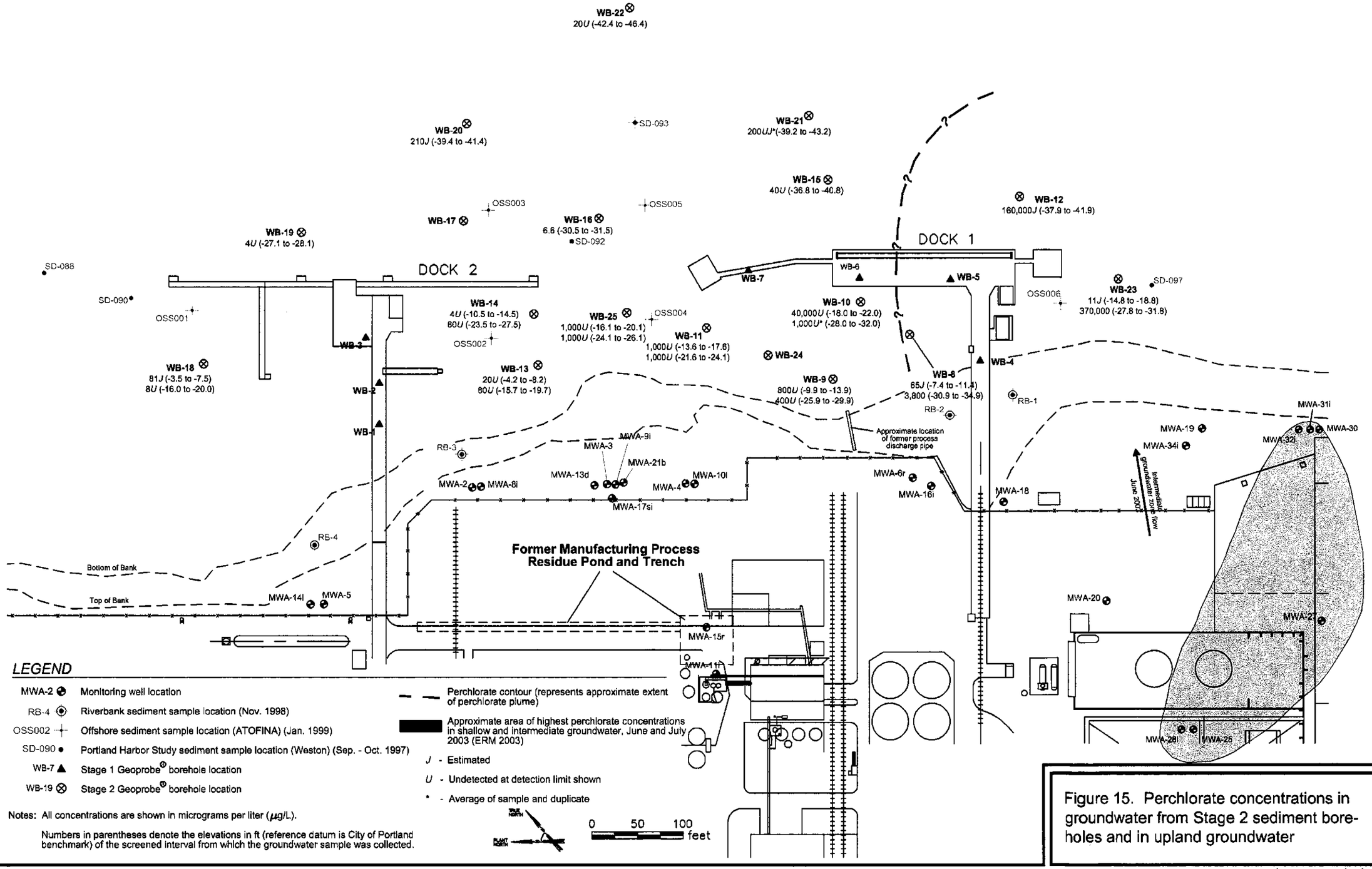


Notes: All concentrations are shown in micrograms per liter (µg/L).

Numbers in parentheses denote the elevations in ft (reference is City of Portland benchmark) of the screened interval from which the groundwater sample was collected.
Samples were collected through a Geoprobe® screen and were unfiltered. This sampling methodology will introduce particulate matter into the aqueous sample; therefore, concentrations of detected pesticides are likely biased high.

Figure 14. Stage 1 and 2 DDT concentrations in groundwater

8601192.001.0612/DDT GW.dwg 11/29/03 OR



Notes: All concentrations are shown in micrograms per liter (µg/L).

Numbers in parentheses denote the elevations in ft (reference datum is City of Portland benchmark) of the screened interval from which the groundwater sample was collected.

Figure 15. Perchlorate concentrations in groundwater from Stage 2 sediment boreholes and in upland groundwater

8601192.001.0612/PERCH.dwg 12/08/03 OR

Appendix A

Borehole Logs

Stage 1 Borehole Logs

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-1

Ground surface: Dock #2

Geologist: David Lamadrid

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
0							- Mudline @ 29.0' below dock - Depth to river surface 24.75' at time of sampling	
25							River surface	
30	SO1711	0.0	50%	NA		SP	Fine to medium SAND, predominantly fine sand, dark yellow-brown (10YR 4/4), wet, few fine gravels, few wood chunks, no odor.	BACKFILLED w/BENTONITE GROUT
35	SO1712	34.2	50%	NA		ML	Sandy SILT, fine to med. sand in thin lenses, very dark gray (2.5Y 3/1), wet. At 34' no sand, faint odor.	
						SW	Fine to med. SAND, very dark gray (2.5Y 3/1), wet.	
40	SO1713	85.7	35%	NA		ML	Clayey SILT, very dark gray (2.5Y 3/1), wet, slight organic odor.	

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 3-4 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.58

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-1

Ground surface: Dock #2

Geologist: David Lamadrid

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
40	SO1713	85.7	35%	NA		SP	Fine to medium SAND, predominantly fine sand, black (2.5Y 2.5/1), wet, few wood chunks, red grains throughout, no odor.	BACKFILLED w/BENTONITE GROUT
45	SO1714	3.4	50%	NA				
	SO1715	3.4	100%	NA				
	SO1716	0.0	100%	NA				
50	SO1717	0.0	15%	NA				
	SO1718	1.7	50%	NA				
	SO1719	1.7	100%	NA		ML	SILT, very dark gray (5Y 3/1), wet.	
						SM	Slightly silty, fine SAND, very dark gray (5Y 3/1), silt ~10-20%, grades to some brown mottling.	
55	SO1720	1.7	100%	NA		ML	Slightly very fine, sandy SILT (sand ~10%), dark yellow-brown (10YR 4/4), wet.	
60							Refusal on vesicular basalt @ 56'. Groundwater sample GW06040201 collected from 33'-37' BGS Groundwater sample GW06040202 collected from 48'-52' BGS	
65								
70								
75								
80								

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 3-4 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.58

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-2

Ground surface: Dock #2

Geologist: David Lamadrid

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
0							- Mudline @ 33.3' below dock - Depth to river surface 24.50' at time of sampling	
25							River surface	
35	SO1721	8.1	60%	NA		SP	Fine to med. SAND, predominantly fine grained, trace silt, dark olive-brown (2.5Y 3/3), wet, scattered red grains throughout. Silt lens 1.5" thick (depth uncertain). Color change to very dark gray (2.5Y 3/1) @ 34.8'.	BACKFILLED w/BENTONITE GROUT
	SO1721	0.0	20%	NA		ML	Very fine sandy SILT, very dark gray (2.5Y 3/1), fibrous organic material 35.4-35.7', no odor, wet.	
	SO1722	0.0	65%	NA				
40	SO1723	0.0	50%	NA			Grades to clayey SILT w/ trace v. fine sand, dark gray (2.5Y 3/1), wet.	

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 4-5 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.67

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-2

Ground surface: Dock #2

Geologist: David Lamadrid

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
40	SO1723	0.0	50%	NA		ML	Clayey SILT w/ trace very fine, sand, dark gray(2.5Y 3/1), wet.	BACKFILLED w/BENTONITE GROUT
	SO1724	8.1	75%	NA			Fine to medium SAND lens (2" thick), black (10YR 2/1), scattered red grains throughout @ 40.7 BGS.	
	SO1725	15.7	65%	NA			2" layer w/ odor, some sand and single apparent volcanic gravel (1" dia.) @ 44.1' BGS.	
45	SO1726	55.5	50%	NA		SP/ ML	Becomes fine bedded with above and fine to med. SAND, predominantly fine sand, black	
	SO1727	15.3	50%	NA		SP	(2.5Y 2.5/1), wet, red grains throughout. Sand only as above.	
50	SO1728	0.0	65%	NA		ML	SILT, dark gray (2.5Y 4/1), wet.	
							Refusal on vesicular basalt @ 51'.	
							Groundwater sample GW06040203 collected from 37'-41' BGS.	
							Groundwater sample GW06040204 collected from 45'-49' BGS	
55								
60								
65								
70								
75								
80								

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 4-5 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.67

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-3

Ground surface: Dock #2

Geologist: Eron Dodak

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
0							- Mudline @ 39.0' below dock - Depth to river surface 22.04' at time of sampling	
5								
10								
15								
20								
							River surface	
25								
30								
35								
40	SO1729	2.8	85%	NA		ML	Clayey SILT, very dark gray (7.5Y 3/1), trace (5-10%) organics, trace very fine sand, wet, soft.	BACKFILLED w/BENTONITE GROUT

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 5-6 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.71

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-3

Ground surface: Dock #2

Geologist: Eron Dodak

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
40	SO1729	2.8	85%	NA		ML	Clayey SILT, very dark gray (7.5Y 3/1), trace (5-10%) organics, trace very fine sand, wet, soft.	
	SO1730	4.7	85%	NA		CL	Silty CLAY, dark gray (7.5YR 3/1), ~40-50% silt, trace organics (~2%), soft, wet.	
			0%	NA				
45	SO1731	2.8	100%	NA		ML/CL	Clayey SILT/silty CLAY, dark gray (2.5Y 4/1), trace organics, wet, soft.	BACKFILLED w/BENTONITE GROUT
	SO1732	4.7	50%	NA		ML	Clayey SILT, very dark gray (2.5Y 3/1), clay ~10-15%, trace (~5-15%) very fine sand, trace non carbonized wood, very moist.	
50	SO1733	4.7	75%	NA		SM		
						SP	Grading to silty fine to med. SAND, very dark gray (2.5Y 3/1) ~25-35% silt, wet, ~5-10% wood fragments, clayey silt laminations (~0.08' thick) @ 50' BGS.	
	SO1734	2.8	55%	NA			Fine to med. SAND, black (2.5Y 2.5/1), trace silt (<5%), micaceous, trace red grains and organics, wet. Silt lamination @ 52.2, 52.5' and 53.3' BGS (~0.02" thick).	
	SO1735	2.8	75%	NA		ML/SM	Silty, very fine SAND/sandy very fine SILT , dark gray (2.5Y 4/1), micaceous, wet.	
55							Refusal @ 54.5' on BASALT, black (2.5Y 2.5/1), slightly vesicular.	
60							Groundwater sample GW06050201 collected from 42'-46' BGS. Groundwater sample GW06060201 and GW06060202 (duplicate) collected from 50'-54' BGS.	
65								
70								
75								
80								

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 5-6 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.71

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-4

Ground surface: Dock #1

Geologist: David Lamadrid, Eron Dodak

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
0							- Mudline @ 29.7' below dock - Depth to river surface @ 23.82' at time of sampling	
25							River surface	
30	SO1736	7.3	~10%	NA		SW	Gravelly, fine to coarse SAND, very dark gray (7.5YR 3/1), predominantly fine to med. sand, gravel up to 1", trace red brick, wet.	BACKFILLED w/BENTONITE GROUT
	SO1737	10.9	~10%	NA			Fine to medium SAND, trace silt, black (10YR 2/1), wet, single wood fragment.	
35	SO1738	7.3	~10%	NA		ML	Clayey SILT, very dark gray (5Y 3/1), wet, wood fragments.	
	SO1739	3.5	50%	NA		SM/ML	Silty SAND/sandy SILT, fine sand, dark brown (10YR 3/3), wet, abundant wood fibers.	
40	SO1740	5.4	50%	NA		SP	Fine to med. SAND, predominantly fine grained, very dark gray-brown (10YR 2/2), wet, red grains throughout.	

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 6-10 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.32

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-4

Ground surface: Dock #1

Geologist: David Lamadrid, Eron Dodak

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
40	SO1741	5.4	60%	NA		SP	Fine to med. SAND, predominantly fine grained, very dark gray-brown (10YR 2/2), wet, red grains throughout. Silt lens (0.5" thick) @ 40.8' BGS. Color grades to brown (10YR 4/3), increased med. grained.	
	SO1742	5.4	50%	NA				
45	SO1743	5.4	50%	NA				
	SO1744	0.0	15%	NA			Color grades to dark yellow-brown (10YR 3/4).	
	SO1745	1.8	50%	NA				
50			0%	NA		SM	Silty, very fine SAND, olive-brown (2.5Y 4/3), micaceous, ~25-35% silt, wet.	
	SO1746	3.6	80%	NA				
						ML	SILT, olive-brown (2.5Y 4/3), wet.	
55	SO1747	5.4	100%	NA		SM	Silty v. fine SAND, dark gray-brown (2.5Y 4/2), micaceous, ~30-35% silt, wet.	
	SO1748	3.6	100%	NA		ML-SM	Bedded silty SAND, sandy SILT and SILT, grayish brown (2.5Y 5/2), micaceous sand, wet, beds 0.5' to 2.5' thick.	BACKFILLED w/BENTONITE GROUT
	SO1749	3.6	100%	NA				
60	SO1750	1.8	100%	NA		SM	Silty, very fine SAND, dark gray-brown (2.5Y 4/2), ~15-25% silt, micaceous, wet. Silt lens, olive-brown (2.5Y 4/3), ~0.1' thick @ 62.2' BGS.	
	SO1751	3.6	100%	NA		ML/SM	Silty, very fine SAND, very fine, sandy SILT, olive-brown (2.5Y 4/3), micaceous, wet. Silt lens 0.1' thick @ 63.5', color as above.	Boring terminated at 64' BGS on 6/6/02, resumed on 6/10/02.
65	SO1757	1.7	100%	NA				
	SO1758	0.0	75%	NA		ML	Becomes bedded SILT and sandy, very fine SAND/sandy SILT, olive-brown (2.5Y 4/3), wet, slightly micaceous, beds 0.5' to 2' thick.	
	SO1759	0.0	100%	NA				
70	SO1760	5.4	100%	NA				
75							Refusal on BASALT @ 72.5' BGS Groundwater sample GW06100201 collected from 34'-38' BGS. Groundwater sample GW06100202 collected from 47'-51' BGS. Groundwater sample GW06100203 (duplicate) collected from 60'-64' BGS.	
80								

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 6-10 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.32

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-5

Ground surface: Dock #1

Geologist: David Lamadrid

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
0							- Mudline @ 48.7' below dock - Depth to river surface 24.98' at time of sampling	0
5								5
10								10
15								15
20								20
25							River surface	25
30								30
35								35
40								40

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 11-12 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.51

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-5

Ground surface: Dock #1

Geologist: David Lamadrid

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
40							Water	
45								
50	SO1775	5.4	100%	NA		ML	Very clayey SILT, very dark gray (2.5Y 3/1), clay ~25-35%, wet, some scattered fibrous organics throughout, faint odor decreasing with depth.	
	SO1776	16.3	100%	NA				
			0%	NA				
55			0%	NA				
			0%	NA				
60	SO1777	283	30%	NA			Scattered small wood chunks to 1" dia., silty fine sand lens (0.5" thick), black (2.5Y 2.5/1), faint odor.	BACKFILLED w/BENTONITE GROUT
	SO1778	7.2	75%	NA		SP		
65	SO1779	3.6	35%	NA			Fine to med. SAND, predominantly fine grained, dark olive-brown (2.5Y 3/3), wet, red grains throughtout, no odor. Very silty fine sand lenses (0.5" thick), single wood chunk in one lens @ 60.2 and 60.5' BGS.	
	SO1780	1.8	50%	NA				
	SO1781	5.4	75%	NA		ML	Slightly clayey SILT, olive-brown (2.5Y 4/3), slight orange-brown mottling, wet, no odor.	
70						ML/SM	Fine sandy SILT/silty SAND, olive-brown (2.5Y 4/3), slight orange-brown mottling, wet, no odor.	
							Refusal @ 70.2', likely BASALT, but no sample observed. Total depth 70.2'.	
75							Groundwater sample GW06110202 collected from 54'-58' BGS. Groundwater sample GW06110203 collected from 64-68' BGS.	
80								

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 11-12 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.51

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

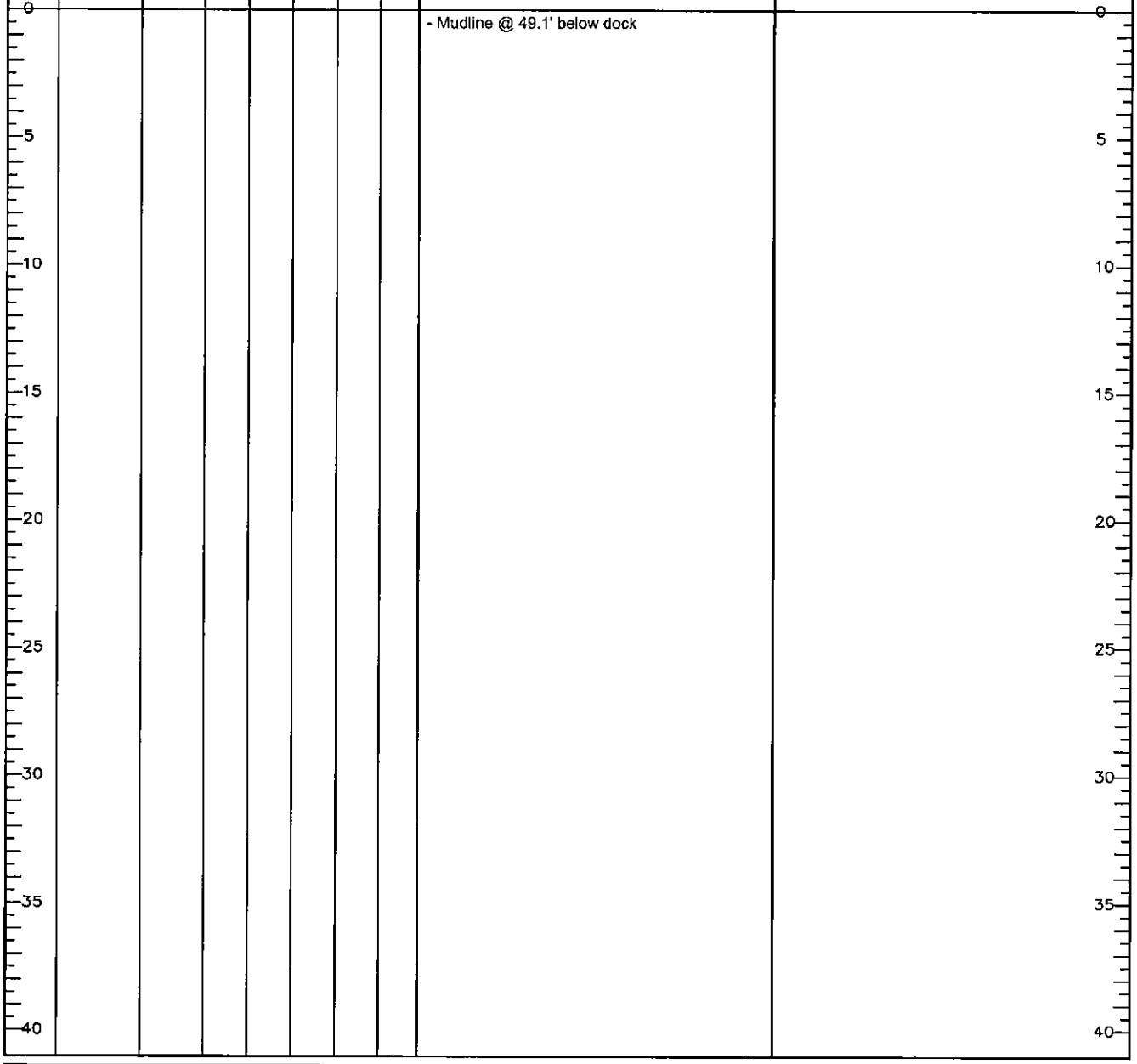
Location: Portland, OR

Borehole: WB-6 (revised 9/02)

Ground surface: Dock #1

Geologist: Eron Dodak

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
0							- Mudline @ 49.1' below dock	



Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 7 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.56

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-6 (revised 9/02)

Ground surface: Dock #1

Geologist: Eron Dodak

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
40								40
45								45
50	SO1752	7.1	100%	NA		ML	Clayey SILT, dark gray (10YR 4/1), ~15-20% clay, wet, trace (5%) tan powdery material, trace (5%) tan to light brown material, weak odor, discontinuous sheen on water.	50
	SO1753	8.9	100%	NA			Decreased clay content below 49.5' BGS.	
			0%	NA			Tan powdery material absent below 51' BGS, trace (~5-10%) non-carbonized wood, tan @ 52.5-53' BGS.	
55	SO1754	314	30%	NA			SILT, very dark gray (10YR 3/1), some very fine sandy silt zones (~25-35%), moist, weak to moderate odor.	55
60	SO1755	>3000	60%	NA			SILT, very dark gray (2.5Y 3/1), trace very fine sand, wet, ~5-10% carbonized and non-carbonized wood, strong odor.	60
			0%	NA		SM	Silty, very fine SAND, gray (2.5Y 5/1), ~10-20% silt, strong odor, residual NAPL observed from 60.9-61.0 ft.	
							Soft probing @ 61-63'. Very soft from 63-65'. Geoprobe rods sank to 65'. No sample collected.	
65	SO1756	1389	60%	NA		ML	SILT, dark gray (7.5YR 4/1), trace fibrous organics (<5%), soft, strong odor at top of sample, weak odor elsewhere, trace fine sand.	65
							Boring terminated @ 67' BGS'.	
70								70
75								75
80								80

BACKFILLED w/BENTONITE GROUT

Drilled By: Cascade Drilling

Drill Method: Direct push probe

Drill Date: 7 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 36.56

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-7

Ground surface: Dock #1

Geologist: Eron Dodak

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
0							- Mudline @ 50.2' below dock - Depth to river surface @ 24.38' at time of sampling	
25							River surface	

Drilled By: Cascade Drilling

Drill Method: Direct push probe (tripod)

Drill Date: 11-12 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 37.11

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Project No: 8601192.001.0634

Project: Acid Plant RI

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-7

Ground surface: Dock #1

Geologist: Eron Dodak

DEPTH (Feet)	SAMPLE NUMBER	OVM (ppm)	% RECOVERY	BLOW COUNT	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	WELL CONSTRUCTION DETAIL
40							Water	
45								
50	SO1761	3.6	100%	NA		ML	Very clayey SILT, very dark gray-brown (2.5Y 3/2), ~15-25% clay, trace fibrous organic material, wet.	
	SO1762	12.6	100%	NA			As above, weak odor.	
55	SO1763	9.0	<1%	NA			As above, color change to dark gray (5Y 4/1).	
	SO1764	56.1	30%	NA		SP	Contact contained ~0.7" wood. Fine to med. SAND, very dark gray (5Y 3/1), trace (<5%) red grains, wet, weak odor.	BACKFILLED w/BENTONITE GROUT
	SO1765	63.7	60%	NA		ML	Clayey SILT, very dark gray (5Y 3/1), ~10-20% clay, trace (<2%) wood, soft, wet. Fine sandy SILT @ 59.6' BGS, very dark gray (5Y 3/1), ~25-35% sand, ~10-15% wood.	
60	SO1766	57.1	40%	NA		SP	Fine to med. SAND, very dark gray (5Y 3/1), trace coarse sand (<5%) and silt (<5%), wet. Occasional silt laminations, weak odor.	
	SO1767	54.0	30%	NA		ML	SILT, grayish brown (2.5YR 5/2), wet, weak odor at ~64.5'-65' BGS, fine to med. sand lens, very dark gray (2.5Y 5/2), 2" thick @ 64' BGS.	
65							Boring terminated @ 65' BGS'.	
							Groundwater sample GW06120202 collected from 61'-65' BGS.	
70								
75								
80								

Drilled By: Cascade Drilling

Drill Method: Direct push probe (tripod)

Drill Date: 11-12 June 2002

Well Casing Elevation: NA

Dock Surface Elevation: 37.11

Borehole Diameter: 2.0"

Datum: City of Portland Datum - 1929

Stage 2 Borehole Logs

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-8

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
	9							Barge Deck	
0								Willamette River surface.	
5								Mudline at 5.7 ft below barge deck.	
		SO1915	6.2	Neg.	25%		SP	Very fine to fine SAND, dark yellow brown (10YR 3/6), slightly micaceous, trace black asphalt-like fragments, wet.	
							SM	Silty very fine to fine SAND, black (5Y 2.5/1), 10-20% silt, trace red grains, weak odor, slight sheen on liquid in sampler. Grades to dark olive gray (5Y 3/2).	
0		SO1916	12.0	Neg.	100%		CL/ ML	Silty CLAY/Clayey SILT, black (2.5Y 2.5/1) with dark olive gray mottling (5Y 3/2), soft, trace sand and wood fragments, wet, moderate odor, sheen.	
10		SO1917	12.0	Neg.	100%				
-5							SM	Silty very fine SAND, dark olive gray (5Y 3/2), 20-30% silt, trace red grains, wet, moderate odor, sheen.	
15							SP		

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 28, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 8.6 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-8

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
		SO1918	15.5	Neg.	100%		SP	Grading to very fine to fine SAND, black (5Y 2.5/1), trace red grains, some wood fragments, wet, moderate odor, sheen.	
	-10	NA	NA	NA	0%		CL	Silty CLAY, light olive brown (2.5Y 5/4), 10-20% silt, moderately firm, moist to wet, no odor.	
21		SO1919	7.0	Neg.	90%		ML	SILT, olive brown, trace clay, some zones slightly more clayey, slightly micaceous, wet, no odor.	
		SO1920	5.4	Neg.	100%				
	-15								
		SO1921	4.5	Neg.	100%		SP	Very fine to fine SAND, black (5Y 2.5/1), trace red grains, wet, moderate odor, sheen.	
26		SO1922	6.2	Neg.	100%		SM/ ML	Very fine sandy SILT/Silty very fine SAND, olive brown (2.5Y 4/3), very slightly micaceous, wet, no odor.	
							SM	Grading to silty very fine SAND, olive brown (2.5Y 4/3), 20-30% silt, very slightly micaceous, wet, no odor.	
	-20	SO1923	5.4	Neg.	100%				
							ML	SILT, olive brown (2.5Y 4/3), trace to 30% very fine sand, slightly micaceous, sand in mixed zones.	
31		SO1924	5.4	Neg.	100%				

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 28, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 8.6 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-8

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
	-25	SO1925	6.4	Neg.	100%		ML	SILT, olive brown (2.5Y 4/3), trace to 30% very fine sand, slightly micaceous, sand in mixed zones.	
		SO1926	7.0	Neg.	70%		SM	Grades to silty very fine SAND, 5-15% silt, micaceous, wet.	
37		SO1927	5.4	Neg.	80%		SP	Grades to very fine to fine SAND, olive brown (2.5Y 4/3), micaceous, wet.	
	-30	SO1928	7.0	Neg.	100%		ML	Very fine sandy SILT, olive brown (2.5Y 4/3), trace orange mottling at 39 ft, 10-20% sand, wet.	
		SO1929	5.4	Neg.	75%		SM	Grading to silty very fine SAND, olive brown (2.5Y 4/3), 20-30% silt, wet.	
42		SO1930	2.0	Neg.	25%		SW	Fine to coarse SAND, black (2.5Y 2.5/1), trace red grains, wet.	
	-35						Rx	BASALT, black, massive.	
								Refusal on basalt at 43.8 ft below barge deck.	
								Groundwater sample GW02280301 collected at 16-20 ft below deck.	
								Groundwater sample GW02280302 collected at 39.5-43.5 ft below deck.	
47									

DEPTH (feet) / ELEVATION (feet) duplicated: -25, 37, -30, 42, -35, 47

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 28, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 8.6 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-9

Ground Surface: Barge Deck
Logged By: Eron Dodak

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	10							Barge Deck			10
0								Willamette River surface.		0	
5	5						SW	Mudline at 5 ft below barge deck. Gravelly fine to coarse SAND, very dark gray (10YR 3/1), trace of silt, gravel up to 1" dia., trace organics, no odor.		5	5
		SO1931	0.0	Neg.	15%						
10	0	SO1932	0.9	Neg.	25%			Becomes very dark gray (7.5YR 3/1), trace of concrete, red brick, and glass.		10	0
		SO1933	3.4	Neg.	90%		SP	Fine to medium SAND, gray (7.5YR5/1), miceaeous, trace fine gravel, weak odor.			
		SO1934	3.5	Neg.	60%			Trace wood. Becomes dark gray (2.5Y 4/1), 15-20% silt, weak to moderate odor, possible sheen at bottom of sampler.			
15										15	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 4, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.1 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-9

Ground Surface: Barge Deck
Logged By: Eron Dodak

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
		SO1935	6.1	Neg.	5%		SP	Fine to medium SAND, dark gray (2.5Y 4/1), 15-20% silt, micaceous, trace fine gravel, weak to moderate odor.	
								5-10% silt, no sheen.	
							ML	SILT, very dark gray (2.5Y 3/1), soft, trace organic fibers, weak odor.	
		SO1936	0.0	Neg.	100%			Becomes dark gray (2.5Y 4/1), trace very fine sand, micaceous, weak to indistinct odor.	
20	-10	NA	NA	NA	0%				
		SO1937	0.0	Neg.	60%		SM	Silty fine to med. SAND, very dark gray (2.5Y 3/1), 15-20% silt, weak to moderate odor, light iridescent sheen.	
							ML	SILT, dark gray (10YR 4/1), slightly stiff, weak odor.	
		SO1938	0.1	Neg.	60%		SP	Fine to med. SAND, very dark gray (2.5Y 3/1), trace red grains, indistinct odor, no sheen.	
								SILT layers, dark gray (10YR 4/1), at 24' bgs (2" thick) and 24.5' bgs (1.2" thick), sheen between layers.	
25	-15	SO1939	0.4	Neg.	40%			Trace of wood and silt.	
							ML	SILT, dark gray (10YR 4/1), slightly stiff, indistinct odor.	
							SM	Silty fine SAND, dark gray (10YR 4/1), 10-15% silt, moderate odor, iridescent sheen.	
		SO1940	0.0	Neg.	90%		ML	Grading to silty very fine SAND, grayish brown (2.5Y 5/2), micaceous.	
								Grading to SILT, grayish brown (2.5Y 5/2), slightly stiff, indistinct odor, no sheen.	
							SM	Silty very fine SAND, dark gray brown (2.5Y 4/2), 15-20% silt, micaceous, indistinct odor.	
30		SO1941	0.0	Neg.	100%		ML		

DEPTH (feet)	ELEVATION (feet)
20	-10
25	-15
30	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 4, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.1 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-9

Ground Surface: Barge Deck
Logged By: Eron Dodak

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
							ML	SILT, grayish brown (2.5Y 5/2), trace clay, moderately stiff, no odor. Sandy silt zone 1 in. thick. 20-30% clay, stiff.	
		SO1942	0.0	Neg.	100%			Very fine sandy SILT, grayish brown (2.5Y 5/2), 20-40% sand, indistinct odor. Grading to SILT.	
							SM	Silty very fine SAND, brown (10YR 4/3), 15-25% silt, micaceous, indistinct odor.	
		SO1943	0.0	Neg.	85%			Becomes dark yellow brown (10YR 3/4).	
35	-25							Becomes dark gray brown (10YR 4/3), some orange mottling, weak to moderate odor.	
		SO1944	0.0	Neg.	100%		ML	SILT, grayish brown (10YR 5/2), slightly to moderately stiff, trace orange mottling, weak to moderate odor.	
							SM	Silty very fine to fine SAND, dark gray brown (10YR 4/2), 15-25% silt, trace orange banding, micaceous, weak to moderate odor.	
		SO1945	0.0	Neg.	75%		ML	Becomes dark yellow brown (10YR 4/4), mostly fine sand. Very fine sandy SILT, dark gray brown (10YR 4/2), micaceous, 30-45% sand, indistinct odor.	
							SM	Silty very fine SAND, brown (10YR 5/3), 20-30% silt, micaceous, indistinct odor, no sheen.	
		SO1946	0.0	Neg.	NA				
40	-30						Rx	BASALT: black (2.5Y 2.5/1), massive, well indurated, indistinct odor.	
								Refusal on basalt at 40.2 ft below barge deck. Groundwater sample GW03040301 collected at 20-24 ft below deck. Groundwater sample GW03040302 collected at 36-40 ft below deck.	
45									

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 4, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.1 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-10

Ground Surface: Barge Deck

Logged By: Eron Dodak

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	10							Barge Deck			10
0										0	
								Willamette River surface.			
5	5									5	5
10	0							Mudline at 14 ft below barge deck.		10	0
15	-5	SO1947*	4.8	Neg.	100%		ML	SILT, dark olive gray (5Y 3/2), trace clay and organics, soft, wet, weak to indistinct odor. Fine sandy SILT zone 0.3' thick.		15	-5

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date March 5-6, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 10.0 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-10

Ground Surface: Barge Deck
Logged By: Eron Dodak

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
		SO1949	5.9	Neg.	100%		ML	SILT, dark olive gray (5Y 3/2), trace clay and organics, soft, wet, weak to indistinct odor.	
		SO1950	8.0	Neg.	NA			Very fine sandy SILT zone 0.3' thick, few thin (1/32" thick) tan clay laminations. Trace fibrous organics, indistinct odor. Becomes very dark gray (5Y 3/1), trace sand, weak to moderate odor, trace of iridescent sheen.	
	-10	SO1951	12.1	Neg.	100%			5-10% very fine sand, indistinct odor, no sheen.	
21		SO1952	8.0	Neg.	100%			Increased fibrous organic content and decreased sand content.	
		SO1953	6.7	Neg.	70%			Becomes dark olive gray (5Y 3/2), with some tan clay laminations (1/32" thick).	
	-15								
26		SO1954	32.2	Neg.	100%			Becomes very dark gray (5Y 3/1), occasional tan clay laminations, weak odor.	
		SO1955	117	Neg.	100%		SM	Silty fine SAND, dark gray (10YR 4/1), 20-30% silt, strong odor, sheen.	
							ML	SILT, dark gray (10YR 4/1), 5-10% fibrous organics, soft to slightly stiff, strong odor, no sheen.	
	-20	SO1956	2280	Neg.	100%				
31		SO1957	271	Neg.	100%			2-5% fiberous organics, moderate odor.	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 5-6, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.0 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-10

Ground Surface: Barge Deck
Logged By: Eron Dodak

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
							ML	SILT, dark gray (10YR 4/1), 2-5% fibrous organics, soft to slightly stiff, moderate odor, no sheen. Silty fine SAND layer at 31.9-32.0 ft below deck. Becomes very dark gray (5Y 3/1), 5-15% very fine sand, trace clay, decreased fibrous organics content, weak odor.			
		SO1958	24.3	Neg.	95%			Sand rich zone at 33.9-34.0 ft below deck.			
	-25	SO1959	8.9	Neg.	90%			Trace carbonized wood, no odor, sand, or clay.			-25
37							SM	Silty medium to coarse SAND, very dark gray (2.5Y 3/1), 5-10% wood, no odor, light organic sheen. Grades to silty very fine sand below 36.7 ft.		37	
		SO1960	5.8	Neg.	100%		SP	Fine SAND, dark gray (2.5Y 4/1), 5-10% silt, trace red grains, no odor or sheen.			
								Silt and wood rich zone 0.3' thick.			
	-30	SO1961	3.5	Neg.	100%			Trace silt. Becomes very dark gray brown (2.5Y 3/2).			-30
42		SO1962	1.1	Neg.	15%		GW	Fine to coarse GRAVEL, very dark gray (10YR 3/1), subrounded to rounded, no odor or sheen.		42	
							Rx	BASALT, black (5Y 2.5/1), vesicular, well indurated, orange staining lining vesicles, no odor or sheen. Refusal on basalt at 42.7 ft below barge deck. Groundwater sample GW03050302 collected at 28-32 ft below deck. Groundwater sample GW03060301 and duplicate sample GW03060302 collected at 38-42 ft below deck. *Duplicate soil sample SO1948 collected from this interval.			
	-35										-35
47										47	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 5-6, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.0 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-11

Ground Surface: Barge Deck
Logged By: Eron Dodak

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
0	9							Barge Deck	
								Willamette River surface.	
								Mudline at 11.5 ft below barge deck.	
		SO1963	4.4	Neg.	100%		ML	SILT, dark olive gray (5Y 3/2), trace fine sand and organics, soft, no odor.	
								Light tan clay-rich zones, 5-10% fibrous organics.	
-5		SO1964	3.7	Neg.	100%			Occasional tan clay rich laminations, weak odor.	
		SO1965	14.8	Neg.	30%			As above with color dark gray (5Y 4/1), weak odor, trace of dark brown oily material.	
-10								As above with consolidated tan fiberous material 19.3-19.4 ft below deck.	
20									

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 6-7, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 9.4 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-11

Ground Surface: Barge Deck

Logged By: Eron Dodak

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
		SO1966	109	Neg.	20%		ML	SILT, dark gray (10YR 4/1), trace of very fine sand and fiberous organics, slightly stiff, weak to moderate odor.	
	-15							As above with ¼" thick very fine sand rich (30-40%) zone.	
25		SO1967	1230	Neg.	60%			As above with strong odor, 5-10% fiberous material, few black bands 1" thick.	
		SO1968	78.5	Neg.	100%			Trace of Silty fine SAND at bottom of sampler, dark gray (10YR 4/1), possible sheen.	
								SILT, dark gray (10YR 4/1), trace micaceous very fine sand and carbonize/noncarbonized wood, slightly stiff, weak odor.	
	-20	SO1969	12.8	Neg.	75%			As above with very fine micaceous sand (10-20%), indistinct odor.	
30		SO1970	21.4	Neg.	45%		SP	Slightly silty fine SAND, dark gray (2.5Y 4/1), trace wood and red grains, indistinct odor, light organic sheen at 31.7 ft only.	
		SO1971	13.5	Neg.	35%			As above with very fine to fine sand, no wood, moderate odor.	
							SM	Silty very fine SAND, olive brown (2.5Y 4/3), micaceous, 30-40% silt, piece of wood at bottom of unit, moderate odor.	
	-25						Rx	BASALT: very dark gray (2.5Y 3/1), massive, well indurated, moderate odor.	
35								Refusal on basalt at 34.0 ft below deck.	
								Groundwater sample GW03070302 collected at 23-27 ft below deck.	
								Groundwater sample GW03070301 collected at 31-33.5 ft below deck.	
	-30								
40									

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date March 6-7, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 9.4 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Sheet: 2 of 2

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-12

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	10							Barge Deck			10
0										0	
								Willamette River surface.			
5	5									5	5
10	0									10	0
15	-5									15	-5
20	-10									20	-10
25	-15									25	-15
30										30	

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 19-20, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 10.1 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-12

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
35	-25								
40	-30							Mudline at 43.0 ft below barge deck.	
		SO1870	2.1	Neg.	100%		ML	SILT, dark gray (10YR 4/1), trace clay, minor fine rootlets, soft, wet, organic odor.	
45	-35	SO1871	0.7	Neg.	NA			Some black mottling.	
		SO1872	2.2	NA	NA			Clayey SILT, dark olive brown (2.5Y 3/3), 20-30% clay, minor fine rootlets, wet, weak to indistinct odor.	
50	-40	NA	NA	NA	0%			GRAVEL, rounded, primarily basalt with minor quartzite, up to 2-in. dia.	
55	-45							Refusal on gravel at 52.2 ft below barge deck. Groundwater sample GW02200301 collected at 48-52 ft below deck.	
60									

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 19-20, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.1 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-13

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
0	9							Barge Deck	
								Willamette River surface.	
								Mudline at 8 ft below barge deck.	
							ML	Fine to medium sandy SILT layer, dark olive gray (5Y 3/2), wet, at 8.00 to 8.04 ft below deck.	
							SM	SILT, dark olive gray (5Y 3/2), soft, single wood fragment 2" thick, wet.	
10	0	SO1896	3.2	Neg.	40%			Fine to medium SAND, very dark gray (5Y 3/1), wet.	
							ML	Silty very fine SAND, mottled dark olive gray (5Y 3/2) and very dark gray (5Y 3/1), slightly micaceous, 20-30% silt, wet.	
		SO1897	7.4	Neg.	100%			Silt content decreased with depth.	
	-5	SO1898	5.7	Neg.	100%			Fine to medium sandy SILT, dark olive gray (5Y 3/2), 30-40% sand, soft, trace organics and wood fragments, rare shells, slight iridescent sheen, wet.	
15								At 13 ft below deck, clayey SILT, dark olive gray (5Y 3/2), 20-30% clay, soft, abundant wood fragments at contact, wet.	
								Trace clay, slight black mottling, slightly micaceous, trace fiberous organics and wood fragments, faint iridescent sheen.	
		SO1899	6.5	Neg.	100%			Grades to 20-30% clay.	
	-10								

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 26, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 8.8 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-13

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
							ML/CL	Clayey SILT / silty CLAY, dark olive gray (5Y 3/2), abundant black mottling that decreases with depth, weak odor, wet.			
		SO1900	12.3	Neg.	100%						
							SP	Very fine to fine SAND, dark olive gray (5Y 3/2), wet, weak odor, faint sheen.			
24	-15	SO1901	25.5	Neg.	100%		ML/CL	Clayey SILT / silty CLAY, dark olive gray (5Y 3/2), abundant black mottling that decreases with depth, weak odor, wet.		24	-15
							SP	Very fine to fine SAND, very dark gray (5Y 3/1), trace red grains and mica, faint to no odor.			
		SO1902	28.8	Neg.	100%						
								Abundant wood at 27.5 ft only, grades to very fine to medium sand.			
		SO1903	16.4	Neg.	100%		ML	Very fine sandy SILT, light olive brown (2.5Y 5/4), slightly micaceous, wet, faint odor.			
29	-20							BASALT (recovery too poor for description).		29	-20
								Refusal on basalt at 28.5 ft below deck.			
								Groundwater sample GW02260303 collected at 13-17 ft below deck.			
								Groundwater sample GW02260304 collected at 24.5-28.5 ft below deck.			
34	-25									34	-25

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 26, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 8.8 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-14

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
	8							Barge Deck	
0								Willamette River surface.	
5									
10									
15								Mudline at 15 ft below barge deck.	
		SO1906	13.8	Neg.	100%		ML	SILT, dark olive gray (5Y 3/2), soft, trace fibrous organics, rare wood fragments, few scattered pale yellow (2.5Y 7/4) thin clay laminations (1/8" thick), wet.	
		SO1907	16.2	Neg.	100%			Grades to 20-30% clay.	
		SO1908	14.6	Neg.	100%			No clay laminations.	
20								Single broken plastic fragment.	

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 27, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 8.5 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-14

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	-15	SO1909	8.9	Neg.	60%		ML	As above with 5-15% clay, three layers (up to 1" thick) of black staining with weak odor at 22-22.7 ft below deck. Less odor with depth.			-15
		SO1910	14.6	Neg.	100%						
27							SM	Silty very fine to fine SAND, dark olive gray (5Y 3/2), 20-30% silt, wet, no odor.		27	
	-20	SO1911	18.7	Neg.	10%		SP	Very fine to fine SAND, dark gray (5Y 3/1), trace red grains, rare small wood fragments, wet, no odor.			-20
32		SO1912	NA	Neg.	15%					32	
	-25	SO1913	NA	Neg.	15%			Single 1" thick gray (5Y 5/1) SILT layer. Possible weak odor.			-25
		SO1914	NA	Neg.	30%		SM	Silty very fine to fine SAND, very dark gray (5Y 3/1), 10-20% silt, trace red grains, wet.			
37							ML/SM	2" thick gray (5Y 5/1) SILT layer, underlain by 1" thick very fine to fine SAND at 36.3 ft below deck.		37	
	-30							Very fine sandy SILT/silty very fine SAND, light olive brown (2.5Y 5/4), slightly micaceous, wet.			-30
								BASALT, slightly vesicular, slight green secondary mineralization in vesicles (few broken fragments only).			
42								Refusal on basalt at 37.0 ft below deck. Groundwater sample GW02270301 collected at 19-23 ft below deck. Groundwater sample GW02270302 collected at 32-36 ft below deck.		42	
	-35										-35

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 27, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 8.5 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-15

Ground Surface: Barge Deck

Logged By: David Livermore

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
0	8							Barge Deck		0	8
								Willamette River surface (estimated).			
5	5									5	5
10	0									10	0
15	-5									15	-5
20	-10									20	-10
25	-15									25	-15
30	-20									30	-20

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 17, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 8.5 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-15

Ground Surface: Barge Deck
Logged By: David Livermore

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
								Mudline at 44 ft below barge deck.	
45	-35	SO1850	0	Neg.	100%		ML	SILT, very dark gray (2.5Y 3/1), very soft, trace of very fine roots, wet.	
		SO1851	0	Neg.	100%				
		SO1852	0	Neg.	100%			Trace mica and charcoal, some clay, moderately plastic.	
50	-40	SO1853	3.0	Neg.	100%			Becomes very dark gray (2.5Y 3/1) to black (2.5Y 2.5/1), trace sand.	
		SO1854	0	Neg.	100%		Rx	BASALT, dark gray, vesicular, slightly weathered, hard, dense.	
								Refusal on basalt at 50.0 ft below barge deck.	
								Groundwater sample GW02170301 collected at 45.3 ft to 49.3 ft below deck.	
55	-45								
60	-50								

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 17, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 8.5 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-16

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	11							Barge Deck			11
0										0	
	10										10
								Willamette River surface.			
5										5	
	5										5
10										10	
	0										0
15										15	
	-5										-5
20										20	
	-10										-10
25										25	
	-15										-15
30										30	

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 19, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 11.5 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-16

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
								Mudline at 38.6 ft below barge deck.	
40	-30	SO1867	8.1	Neg.	100%		ML	SILT, mottled dark gray (10YR 4/1) and black (10YR 2/1), trace clay, wet, weak to moderate odor.	
		SO1868	11.8	Neg.	100%			Becomes light olive brown (2.5Y 4/1), slightly micaceous, moderate odor.	
		SO1869	NA	NA	50%		SP	Very fine to fine SAND, dark gray brown (2.5Y 4/2), uniform, wet, slight odor.	
45	-35							BASALT, massive (few broken fragments only).	
								Refusal at 43.3 ft below barge deck.	
								Groundwater sample GW02190301 collected at 42-43 ft below deck.	
50	-40								
55	-45								
60									

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 19, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 11.5 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-17

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
0	9							Barge Deck		0	9
								Willamette River surface.			
5	5									5	5
10	0									10	0
15	-5									15	-5
20	-10									20	-10

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 27, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 8.8 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-17

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
								Mudline at 34.0 ft below barge deck.	
35	-25	SO1904	7.3	Neg.	25%		ML	Slightly clayey SILT, very dark gray (5Y 3/1), 5-15% clay, soft, trace rootlets and black mottling, wet, organic odor.	
		SO1905	13	Neg.	100%			Very fine to fine SAND, very dark gray (5Y 3/1), trace red grains, wet, no odor.	
								BASALT, black, massive (few fragments only).	
								Refusal on basalt at 36.2 ft below deck.	
								No groundwater samples collected.	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 27, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 8.8 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-18

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
	10							Barge Deck	
0								Willamette River surface.	
	5								
5								Mudline at 8 ft below barge deck.	
		SO1888	5.1	Neg.	100%		SM	Silty very fine SAND, very dark gray (5Y 3/1), 30-40% silt, slightly micaceous, trace fibrous organics and fine rootlets, rare fine gravel, few wood fragments, wet.	
	0						ML	Grading to slightly sandy SILT, very dark gray (5Y 3/1), 5-15% fine sand, slightly micaceous, trace fiberous organics and fine rootlets, rare fine gravel, few wood fragments, wet.	
10		NA	NA	NA	0%				

DEPTH (feet)	ELEVATION (feet)
0	10
5	5
10	0

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 25-26, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 9.5 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-18

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
		SO1889	5.1	Neg.	100%		ML	Slightly sandy SILT, very dark gray (5Y 3/1), 5-15% fine sand, slightly micaceous, trace fibrous organics and fine rootlets, rare fine gravel, few wood fragments, wet.	
							SM	Silty very fine SAND, very dark gray (5Y 3/1), trace fibrous organics, abundant wood fragments at 14 ft, wet.	
-5		SO1890	4.3	Neg.	100%		ML	Slightly sandy SILT, very dark gray (5Y 3/1), 5-15% sand, slightly micaceous, trace organics, wet.	
							SM	Silty very fine to fine SAND, very dark gray (5Y 3/1), 20-30% silt, trace fibrous organics and fine rootlets, few wood fragments, wet.	
		SO1891	5.1	Neg.	60%		ML	Slightly clayey SILT, dark olive gray, trace organics and very fine sand, 5-15% clay, wet, no odor, sheen.	
17							SM	2" thick silty SAND layer, 10-20% silt, weak odor, sheen.	
								Clayey SILT, dark olive gray (5Y 3/2), rare wood fragments, wet, faint odor.	
		SO1892	6.7	Neg.	100%				
-10								1" thick black (5Y 2.5/1) fine to medium sand layer, wet, moderate odor.	
								Clayey SILT as above with weak odor.	
		SO1893	5.9	Neg.	50%		SP	Very fine to fine SAND, black (5Y 2.5/1), trace red grains and fine mica flakes, few scattered thin (1/4" to 3/4" thick) silt laminations, wet, faint odor, sheen.	
22								Odor decreases with depth.	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 25-26, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 9.5 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-18

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	-15	SO1894	6.7	Neg.	15%		SP	Very fine to fine SAND, black (5Y 2.5/1), trace red grains and fine mica flakes, few scattered thin (1/4" to 3/4" thick) silt laminations, wet, faint odor, sheen.			-15
29	-20	SO1895	6.7	Neg.	75%		ML	Clayey SILT, dark olive gray, few wood fragments, wet, no odor, no sheen.		29	-20
								BASALT, black, massive (few fragments only).			
								Refusal on basalt at 29.7 ft below deck.			
								Groundwater sample GW02250302 collected at 13-17 ft below deck.			
								Groundwater sample GW02260301 collected at 25.5-29.5 ft below deck.			
34	-25									34	-25

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 25-26, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 9.5 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-19

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	10							Barge Deck			10
0										0	
								Willamette River surface.			
5	5									5	5
10	0									10	0
15	-5									15	-5
20	-10									20	-10

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 24-25, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 9.9 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-19

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
								Mudline at 34.1 ft below barge deck.	
28	-25	SO1885	3.6	Neg.	100%		ML	SILT, dark olive gray (5Y 3/2), soft, trace fine rootlets and clay, trace mica, single ½" dia. gravel at 34.1 ft, organic odor.	
		SO1886	4.5	Neg.	40%			½" thick lamination of fine to medium SAND at 35.5 ft.	
33		SO1887	5.4	Neg.	100%		SM	Trace fine sand with depth and black mottling at 36 ft.	
							ML/SP	Silty very fine to fine SAND, very dark gray (5Y 3/1), 10-20% silt, wood fragments up to 1" dia., wet.	
38	-30							SILT, olive (5Y 5/3), trace clay with some mixed very fine to fine SAND, very dark gray (5Y 3/1), single 2.5" long wood fragment, organic odor.	
								Few BASALT fragments in sample shoe.	
43	-35							Refusal on basalt at 38.1 ft below deck.	
								Groundwater sample GW02250301 collected at 37-38 ft below deck.	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 24-25, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 9.9 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-20

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	10							Barge Deck			10
0										0	
								Willamette River surface.			
5	5									5	5
10	0									10	0
15	-5									15	-5
20	-10									20	-10
25	-15									25	-15
30	-20									30	-20

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 24, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 9.6 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-20

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
35	-25							Mudline at 46.5 ft below barge deck.	
40	-30	SO1882	1.7	Neg.	100%		ML	SILT, dark olive gray (5Y 3/2), soft, trace fine rootlets and clay, wet, organic odor.	
45	-35	SO1883	3.5	Neg.	60%				
50	-40	SO1884	3.5	Neg.	100%		Rx	BASALT, black (2.5Y 2.5/1), moderately vesicular, green secondary mineralization in vesicles, no odor.	
55	-45							Refusal on basalt at 51.8 ft below deck.	
60	-50							Groundwater sample GW02240301 collected at 49-51 ft below deck.	

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 24, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 9.6 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-21

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	10							Barge Deck			10
0										0	
								Willamette River surface.			
5	5									5	5
10	0									10	0
15	-5									15	-5
20	-10									20	-10
25	-15									25	-15
30										30	

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 20, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 10.3 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-21

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
								Mudline at 45.2 ft below barge deck.	
45	-35	SO1873	2.6	Neg.	100%		ML	SILT, dark olive gray (5Y 3/2), trace clay, minor fine rootlets, soft, wet, organic odor.	
		SO1874	2.6	Neg.	80%				
50	-40	SO1875	4.7	Neg.	100%			As above with minor black (10YR 2/1) mottling.	
		SO1876	4.0	Neg.	100%				
		NA	NA	NA	0%			Some sand in sampler shoe at 52.3 ft below deck.	
55	-45							Refusal on rock or gravel (?) at 53.4 ft below barge deck. Groundwater sample GW02200302 collected at 49.5-53.5 ft below deck.	
60									

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 20, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 10.3 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-22

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	12							Barge Deck			12
0										0	
	10										10
								Willamette River surface.			
5										5	
	5										5
10										10	
	0										0
15										15	
	-5										-5
20										20	
	-10										-10
25										25	
	-15										-15
30										30	
	-20										-20

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date February 21, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 11.6 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-22

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
								Mudline at 50.5 ft below barge deck.	
-40		SO1877	6.3	Neg.	100%		ML	SILT, dark olive gray (5Y 3/2), trace clay and rootlets, wet, organic odor.	
		SO1878	5.3	Neg.	90%				
54		SO1879	5.3	Neg.	100%		SM	Slightly silty very fine to fine SAND, dark olive gray (5Y 3/2), trace to 15% silt, trace red grains.	
-45		SO1880	6.3	Neg.	25%		SP	Very fine to fine SAND, very dark gray (2.5Y 3/1), trace red grains, wet.	
59									
-50		SO1881	6.3	Neg.	25%		GW	Fine to coarse GRAVEL, dark gray (2.5Y 4/1), primarily rounded basalt with minor quartzite, 10-20% very fine to fine sand.	
64								Refusal due to gravel at 62.5 ft below barge deck. Groundwater sample GW02210301 collected at 54-58 ft below deck.	
-55									

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 21, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 11.6 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-23

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
0	10							Barge Deck	
								Willamette River surface.	
5	5								
10	0								
15	-5								
20	-10							Mudline at 21.4 ft below barge deck.	
		SO1855	1.0	Neg.	100%		ML	SILT, very dark gray (10YR 3/1), trace clay, very soft, uniform, trace wood fragments and very fine rootlets, organic odor, wet.	
		SO1856	1.0	Neg.	100%			As above with 10-20% clay, trace of fine sand, single 1/8" thick sand laminae.	
25	-15	SO1857	1.0	Neg.	5%				
		SO1858	1.7	Neg.	100%				
		SO1859	2.7	Neg.	80%			Grades to dark olive gray (5Y 3/2)	
30									

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 18, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.2 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-23

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
		SO1860	2.7	Neg.	50%		ML				
		SO1861	2.7	Neg.	100%			Clayey SILT, dark yellow brown (10YR 4/4), trace fine sand, wood fragments up to 2" dia., soft, wet.			
35	-25	SO1862	2.7	Neg.	NA			Grades to very dark gray brown (10YR 3/2)		35	-25
		SO1863	2.4	Neg.	80%			Grades to 5-10% sand.			
		SO1864	2.4	Neg.	100%		SP	Very fine to fine SAND, trace silt and fine organics, wet, no odor.			
40	-30						ML	Slightly clayey SILT, olive yellow (2.5Y 6/6), firm, moist to wet.		40	-30
		SO1865	2.0	Neg.	100%		SP	Very fine to fine SAND, olive brown (2.5Y 4/3), trace silt and fine organics, rare pieces of wood, wet, no odor.			
		SO1866	NA	Neg.	100%		ML	SILT, olive yellow, firm, moist to wet.			
							Rx	BASALT, black, massive.			
45	-35							Refusal at 42.4 ft below barge deck.		45	-35
								Groundwater sample GW02180301 collected 25-29 ft below deck.			
								Groundwater sample GW02180302 collected 38-42 ft below deck.			
								Note: Sample interval for SO1857 is 25-29 ft below deck.			
50	-40									50	-40
55	-45									55	-45
60										60	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date February 18, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.2 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634

Project: ATOFINA

Client: ATOFINA Chemicals, Inc.

Location: Portland, OR

Borehole: WB-24

Ground Surface: Barge Deck

Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	10							Barge Deck			10
0										0	
								Willamette River surface (estimated).			
5	5									5	5
10	0							Mudline at 9.4 ft below barge deck. No soil samples collected at 9.4-20 ft below deck.		10	0
15	-5									15	-5

Drilled By: Cascade Drilling

Drill Method: Direct Push

Drill Date March 7, 2003

Well Casing Elevation: NA

Barge Deck Elevation: 10.0 ft

Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-24

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
	-10	SO1972	316	Neg.	100%		ML	Slightly clayey SILT, olive brown (2.5Y 4/3), 10-20% clay, abundant hairline organics, wet, moderate odor.			-10
		SO1973	337	Neg.	100%			Slightly silty fine to medium SAND layer 21.3-21.6 ft below deck, olive brown (2.5Y 4/3), slightly micaceous, 10-20% silt, wet, strong odor, slight sheen. Similar layers (1" thick) at 22 and 22.5 ft below deck.			
24								At 22.9 ft, slightly clayey SILT, very dark gray, no hairline organics, odor decreases with depth, rare wood fragments.		24	
	-15	SO1974	23.9	Neg.	90%						-15
		SO1975	9.5	Neg.	50%		SP	Fine to medium SAND, dark gray brown (2.5Y 4/2), trace of red grains, rare wood fragments, faint odor decreasing with depth.			
29		SO1976	4.2	Neg.	50%			2" thick fine to medium sandy SILT layer, dark gray brown (2.5Y 4/2), 10-20% sand, wet.		29	
	-20	SO1977	10.5	Neg.	NA						-20
								Boring terminated at 32 ft below barge deck. No groundwater samples collected.			
34										34	
	-25										-25

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 7, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 10.0 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-25

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)
0	10							Barge Deck	
								Willamette River surface.	
5	5								
10	0							Mudline at 14.3 ft below barge deck.	
15	-5	SO1978*	1.5	Neg.	100%		ML	Clayey SILT, dark olive gray (5Y 3/2), 10-20% clay, very soft, trace hairline organics, abundant white clay laminations up to1/8" thick , wet.	
		SO1980	0.0	Neg.	100%		SM	Silty very fine to fine SAND layer, dark olive gray (5Y 3/2), 20-30% silt, wet.	
								Clayey SILT as above with 20-30% clay.	
		SO1981	0.2	Neg.	100%		SM	Silty very fine to fine SAND layer, dark olive gray (5Y 3/2), 20-30% silt, wet.	
20	-10						ML	Grading to SILT, dark olive gray (5Y 3/2), trace of clay and very fine sand, soft, wet.	

DEPTH (feet) / ELEVATION (feet) duplicated: 0 / 10; 5 / 5; 10 / 0; 15 / -5; 20 / -10

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 7-10, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 9.9 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929

Project No: 8601192.001 0634
Project: ATOFINA
Client: ATOFINA Chemicals, Inc.
Location: Portland, OR

Borehole: WB-25

Ground Surface: Barge Deck
Logged By: David Lamadrid

DEPTH (feet)	ELEVATION (feet)	SAMPLE NUMBER	OVM (ppm)	SUDAN IV	RECOVERY	INTERVAL	GROUP SYMBOL	LITHOLOGIC DESCRIPTION	BACKFILL (Bentonite grout)	DEPTH (feet)	ELEVATION (feet)
		SO1982	0.1	Neg.	60%		ML	SILT, dark olive gray (5Y 3/2), trace of clay and very fine sand, soft, wet.			
								Clayey SILT, dark olive gray (5Y 3/2), some black mottling, 10-20% clay, trace wood fragments, slight odor.			
	-15										-15
26		SO1983	1.0	Neg.	40%		SM	Silty very fine to fine SAND, very dark gray (5Y 3/1), 20-30% silt, wet, slight odor.		26	
		SO1984	1.0	Neg.	30%		SP	Grades to very fine to fine SAND, very dark gray (5Y3/1), trace of red grains, 20-30% silt, wet, slight odor.			
	-20	SO1985	8.5	Neg.	45%		SP/ ML	Bedded very fine to fine SAND, black (5Y 2.5/1), and clayey SILT, olive gray (5Y 4/2), beds up to 3" thick, trace red grains in sand, rare wood fragments, weak odor decreases with depth.			-20
31		SO1986	4.4	Neg.	100%					31	
		SO1987	0.0	Neg.	40%						
	-25	SO1988	0.0	Neg.	50%		SP	Fine to medium SAND, olive gray (5Y 4/2), mostly fine sand, slightly micaceous, wet, faint odor.			-25
36							Rx	BASALT: black (5Y 2.5/1), slightly vesicular, indurated, faint odor.		36	
								Refusal on basalt at 36.0 ft below barge deck.			
								*Duplicate soil sample SO1979 collected on this interval.			
								Groundwater sample GW03100301 collected at 26-30 ft below deck.			
	-30							Groundwater sample GW03100302 collected at 34-36 ft below deck.			-30
41										41	

Drilled By: Cascade Drilling
Drill Method: Direct Push
Drill Date March 7-10, 2003

Well Casing Elevation: NA
Barge Deck Elevation: 9.9 ft
Borehole Diameter: Varies

Datum: City of Portland Datum - 1929